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EXERCISES IN MAP INTERPRETATION

Submitted by

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In partial fulfillment of the
requirements for
he degree of Master of Education
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CHAPTER I

Introduction

INTRODUCTION

It is becoming increasingly apparent that incidental teaching fails, in general, to provide children in the intermediate grades with the map reading skills so necessary in developing certain understandings in the social studies.

We know that children must be taught to speak correctly, to read fluently, and to write acceptably. Similarly they must be taught to read and to draw deductions from maps. It is not a skill which can be assimilated casually along with the many other phases of social studies teaching.

This study is an attempt to build a workbook to give practice in reading and interpretation of common map symbols through short graded drills.

A map is an instrument which is invaluable in developing understandings of human and world relationships. However, the ability to read maps intelligently and to draw deductions from an accumulation of specific map symbols which will show the interrelationship of man's activities to his natural environment is not commonly planned for in intermediate grades.

The exercises in this workbook will provide practice in using maps as a tool for securing concepts and relationships necessary for the kinds of understandings that maps can give to those who know how to use them.

The use of the flat map can never replace the globe in teaching value as the globe is the nearest representation of

the actual world itself. However, the value of teaching by globe is limited in the classroom by its small size and by the inability to provide one for each pupil. The flat map is the best practical device for classroom instruction. Arranged in workbook form makes it convenient and accessible for individual use.

CHAPTER II

Review of the Literature

REVIEW OF THE LITERATURE

A survey of the literature shows that most educators and geographers agree on the vast importance of the map as a visual tool. There is a general agreement that maps should not be used for the purpose of location of places alone, but as a source of much graphic material which when properly interpreted will add much to geographic understanding.

Though much has been written about the importance of teaching children to read maps quickly and intelligently, with its concomitant ability to draw conclusions from such reading, too little seems to have been done to provide practical training in the use of these skills. Educators agree in general that training in proper map reading has been woefully disregarded in the geography or social studies program.

Professor George T. Renner states

> "The map is by far the most important of all the major visual instruments in education, much more important, for example, than the highly respected sound film. It holds this rank because of its *a priori* value in concept building, and because of the variety of uses to which it may be put. Nevertheless, it is the most neglected of all the so-called 'visual aids.'"[1]

Lacey[2] emphasizes the importance of the mastery of maps

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[1] George T. Renner, "The Map as an Educational Instrument," *Social Education*, 4:477-482, November, 1940.

[2] Joy M. Lacey, *Teaching the Social Studies in the Elementary Schools*, Burgess Publishing Co., Minneapolis, (1941) pp. 69-70.

in the social studies program.

Uttley[1] gives a list of abilities in map reading to be attained in Grades 4, 5, and 6. This list seems to have been the chief source of the list of abilities and understandings which is given in the Manual for the Interpretation of Iowa Every-Pupil Tests of Basic Skills.[2] These understandings have been closely followed in the set-up of the exercises in this study.

Shoen[3] writes about the importance of having children visualize the symbolism used on maps by making them themselves.

Thorp[4] conducted an experimental research on pupils' interpretive knowledge in Grades Four through Eight in representative Rhode Island schools. Her findings revealed a marked lack of ability to do deductive reasoning from the study of maps. However, a sixth grade experimental group which had been taught the skills, showed by its consistently high scores

---

[1] Marguerite Uttley, "A Provisional Formulation of Attainments in Geography for the Elementary School," The Teaching of Geography, Thirty-Second Yearbook of the National Society for the Study of Education, Public School Publishing Co., Bloomington, Illinois, (1933) pp. 247-264.

[2] Manual for Interpretation of Iowa Every-Pupil Tests of Basic Skills, Form M., Houghton Mifflin Co. (1941), p. 41.

[3] Harriet H. Shoen, "The Making of Maps and Charts," Ninth Yearbook, National Council for the Social Studies, (1938) pp. 83-98.

[4] Mary T. Thorp, "Objective Studies Showing Need for Giving Instruction in use of Geography Tools," unpublished Master's Thesis, Boston University, (1932).

that this phase of map study can be mastered and understood by children of intermediate grades.

DeGrasse[1] has formulated a workbook of map reading which covers very completely skills needed in lower intermediate grades but which deals rather briefly with map interpretation.

Forsyth[2] states that it has taken a great war to bring to the minds of our educational leaders a realization that a critically significant area of knowledge has been sadly neglected in our schools.

She has published a series of lessons on map reading for use in junior high schools which emphasizes the three elements common to all maps; scale, network, and symbols. The interpretive application of these three elements is subordinate to factual knowledge which is necessary to their intelligent use.

Lee and Lee conclude that

> "Maps serve many valuable purposes in helping pupils to understand a number of phenomena in their relation to social studies. . . . Investigations have shown that map reading is usually poorly taught, but that when it is well taught, the child can come to understand how to read and use maps with meaning and facility."[3]

---

[1] Marjorie de Grasse, Study of the Use and Meaning of Maps, unpublished Master's Thesis, Boston University, (1945).

[2] Elaine Forsyth, Map Reading, Geographic Education Series, McKnight and McKnight, Bloomington, Illinois, (1944).

[3] J. Murray Lee and Doris May Lee, The Child and His Curriculum, D. Appleton-Century Co., New York, (1940), p. 248.

Thralls and Reeder emphasize the importance of the map as a tool from which a great deal of geographic knowledge can be obtained:

> "A map is a shorthand record of a mass of geographic knowledge which would require many pages, or even a volume, to record in words. . . . Many of our fundamental ideas of the geography of the world may be secured from maps rather than from the textbook materials."[1]

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[1] Zoe A. Thralls and Edwin H. Reeder, Geography in the Elementary School,, Rand McNally and Company, New York, (1932), p. 384.

CHAPTER III

Method of Procedure in Building the Exercises

METHOD OF PROCEDURE IN BUILDING THE EXERCISES

An analysis of results on the map skills portion of the Iowa Every-Pupil Tests of Basic Skills reveals a great lack of ability to read the simplest maps on the part of intermediate grade children. The power to do deductive reasoning from two or more pattern maps was sadly lacking in the great majority of cases.

Scattered through social studies and geography textbooks are found maps and map questions. Most of the questions are factual in nature involving chiefly location answers readily discernible on the map itself. The proportion of questions involving critical thinking is small. In practically no case is there a systematic progression of instruction. This makes it difficult for the classroom teacher to develop the concepts necessary for intelligent map interpretation.

It is hoped that this workbook will aid the teacher and the child in developing reading and reasoning skills through a systematic progression of exercises in map reading and map interpretation.

The Iowa Manual[1] lists six major abilities, the mastery of which is required for the most comprehensive appreciation of what a map reveals. The list which follows was used as a guide

---

[1] Manual for Interpretation of Iowa Every-Pupil Tests of Basic Skills, Form M., Houghton Mifflin Co., Boston, (1941), p. 41.

in compiling the work sheets.

"1. Ability to visualize the represented area in its natural plane and to read directions correctly
    1-a To read directions
    1-b To read directions of land slope from direction of river flow

2. Recognizing and interpreting standard map symbols
    2-a To recognize symbols
    2-b To interpret upstream and downstream

3. Identifying and visualizing symbols with the use of a key
    3-a To use scale of miles
    3-b To interpret upstream and downstream

4. Ability to get facts and information from parallels and meridians
    4-a To give the latitude and longitude of a certain place
    4-b To find direction by use of a parallel
    4-c To recognize the general pattern of a time zone
    4-d To estimate man's ways of living in a region from location of the region in the world sun pattern
    4-e To recognize differences in seasons and hours of daylight in different latitudes

5. Ability to apply physical facts to map situations.

6. Ability to read and interpret facts from pattern maps
    6-a To recognize what it is that a given map portrays and to recognize areas to which a certain symbol applies
    6-b To read facts directly from a single pattern map
    6-c To read facts directly from two pattern maps
    6-d To obtain facts from several pattern maps and use them in estimating how man probably lives in the region."[1]

[1] *Manual for Interpretation of Iowa Every-Pupil Tests of Basic Skills, Form M.*, Houghton Mifflin Co., Boston, (1941), p. 41.

The exercises will aid in the development of specific map skills. They are not sufficient in themselves nor are they intended to be used as tests. A certain amount of basic knowledge on the part of the pupil is presupposed. It is hoped that the practice sheets will supplement the teacher's instruction and will contribute to a better comprehension of the desired understandings and objectives of map reading and interpretation. A review of map symbols, direction, and scale of miles paves the way for the introduction of many types of maps and the possibilities for learning human and natural relationships. There is constant repetition of certain factors, the mastery of which is essential.

The introduction of two, four, and six pattern maps provides an effective tool in visualizing distribution patterns and determining social relationships from them. These concepts can be developed and provide a fundamental groundwork for building a knowledge of individual, community, national, and international correlations.

The placing of exercises on zones, parallels and meridians, degrees, and time zones toward the end of the work is purposely done as that seems to be difficult for children. It is hoped that the familarity with maps previously acquired will make the presentation of this material easier at this time.

It will be noted that the exercises do not include information about the international date line or about the

various projections. These seem more fitting for introduction into the junior and senior high school curricula.

Children should be given to understand that the globe, only, can accurately show true relationships and that a necessary distortion results when a round surface is transferred to a flat surface. Then their questions about why some maps make land and water surfaces look different than others will be satisfied.

Several review exercises will indicate the child's mastery of the six desired map reading abilities and will aid the teacher in analyzing any omissions or weaknesses in comprehension.

The subject of the Air Age is discussed very briefly. The tremendous importance of this new evolution in global relationships seems to indicate that it warrants a special study far beyond the scope of this present workbook.

No nation in this world can longer live in a fanciful state of isolation. Any part of the world may be linked with any other in an instant by radio or in sixty hours of flight time by plane.

To acquire the appreciations involved in the new concept of a close community of nations involves a problem of research which could well be developed as an outcome of the existing studies on map skills.

CHAPTER IV

The Exercises

CHAPTER IV

The Exercises

These exercises are constructed to further the skills and understandings of the pupils so that they will intelligently grasp the mechanics of map reading and acquire the habit of map interpretation. The following subjects are covered:

1. Maps- Map Legend - Color
2. Map Symbols and Land Formations
3. Map Symbols and Water Formations
4. Map Directions
5. Physical Maps - Relief Maps - Contour Lines - Elevation shown by Color
6. Colored Contour Bands
7. Physical-Political Maps
8. Scale of Miles
9. Political Maps
10. Weather and Temperature
11. Weather
12. Air Currents
13. Rainfall
14. Ocean Currents
15. Climate - Air Currents - Ocean Currents - Elevation
16. Population
17. Occupations
18. Transportation

19. Mining
20. Vegetation
21. Lumbering
22. Grazing
23. Manufacturing and Industry
24. Export and Import
25. History Maps
26. Two Pattern Maps
27. Four Pattern Maps
28. Six Pattern Maps
29. Parallels and Meridians
30. Degrees
31. Latitude and Longitude
32. Zones
33. Map lines - Zones - Directions - (Review)
34. Locating Latitude and Longitude
35. Time
36. Review Exerciese (seven)
37. The Air Age

1. Maps - Map Legend - Color

A map is a representation or plan of a part or all of the earth's surface. It is usually flat.

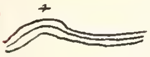
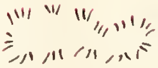
Map makers use certain signs or symbols to show formations on maps. For example, a line of alternate dots and dashes may stand for a state boundary. A wavy line may stand for a river. A dot may stand for a city. Many of these symbols are standardized. That is, they are used throughout the world by map makers. This is not always true so a reader of maps will always study the map legend carefully before attempting to study a map.

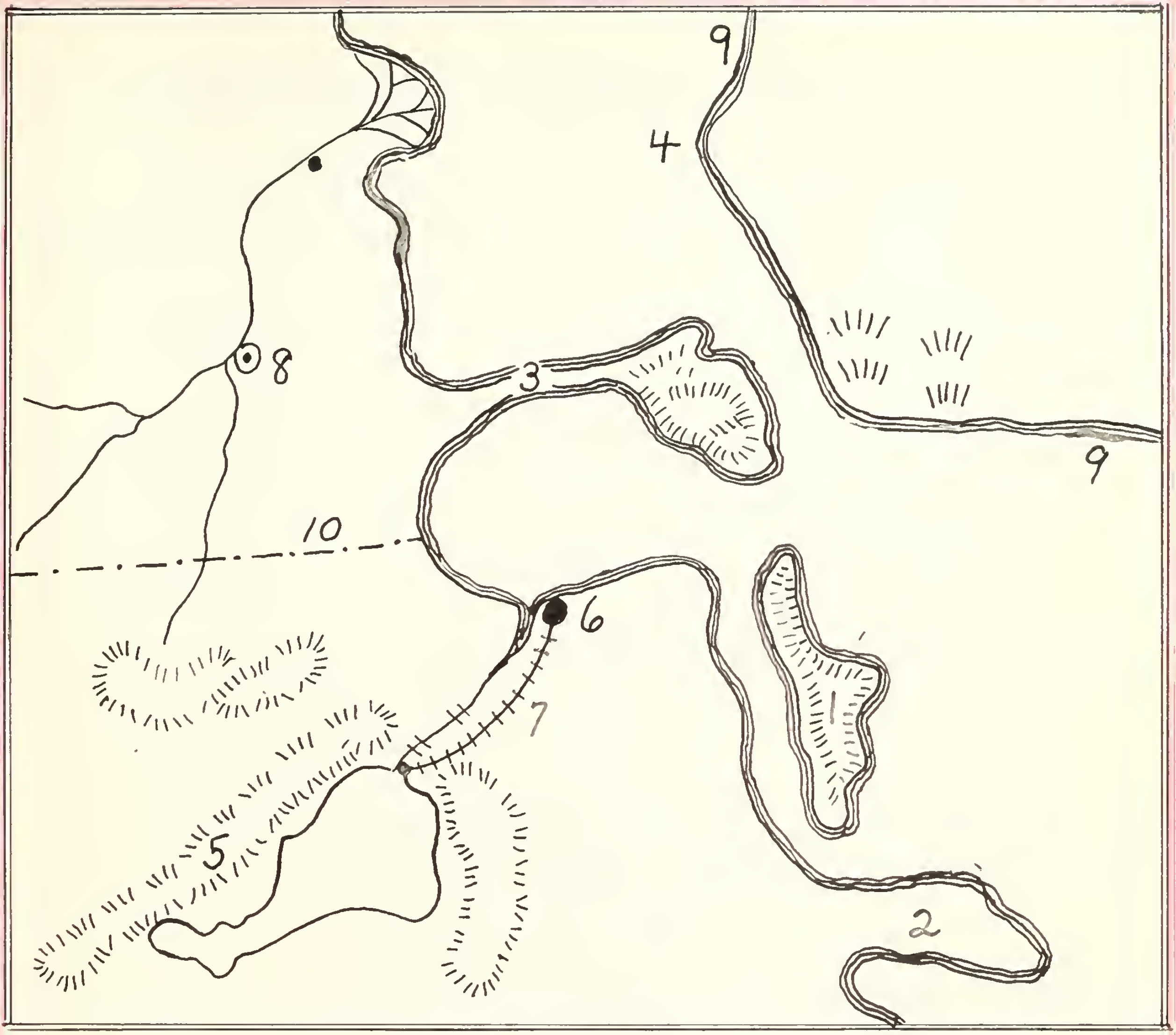
The Map Legend or map key is usually found in a box at one corner of the map. It will give the meaning of map symbols, of colors, the scale of miles, and any other information needed in interpreting the map.

Colors on a map may show several things. Most common on relief maps is the use of color to designate heights of land above sea level. Other uses are to show political subdivisions such as countries, states, counties, towns, and boroughs. Colors may also be used as symbols to show population, weather, industries, agricultural products, mining, grazing, and many other facts which may be shown on maps.

2. Map Symbols and Definitions of Land Formations

Study the map symbols and definitions given below, then do the work on the map sheet on the next page.

+++++++	Railroad	
	Cape	a point of land extending into the water
	Coast Line	the edge of the land where it meets the water
	Continent	the largest division of land
	Country	a political sub-division of a continent
—·—·—·—	State Boundary . .	a line separating political sub-divisions of a country
	Island	a body of land surrounded by water
	Isthmus	a narrow neck of land connecting two larger bodies of land
	Peninsula	a body of land almost surrounded by water
	Mountain Range . .	a ridge of mountains, usually in a line
•	Town	a large densely populated place
●	City	a very large town
⊙	Capital City . . .	the seat of government of a state or country



Map Symbols and Land Formations

Opposite the proper formation or definition write the number which represents it on the map. Be careful, not all formations or definitions are shown.

Mountain Range ____________________

State Boundary ____________________

Coast Line ____________________

Island ____________________

Capital City ____________________

Peninsula ____________________

Cape ____________________

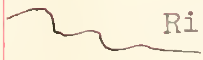
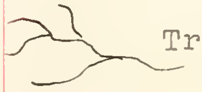
City ____________________

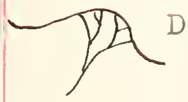
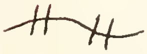
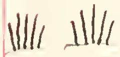
Isthmus ____________________

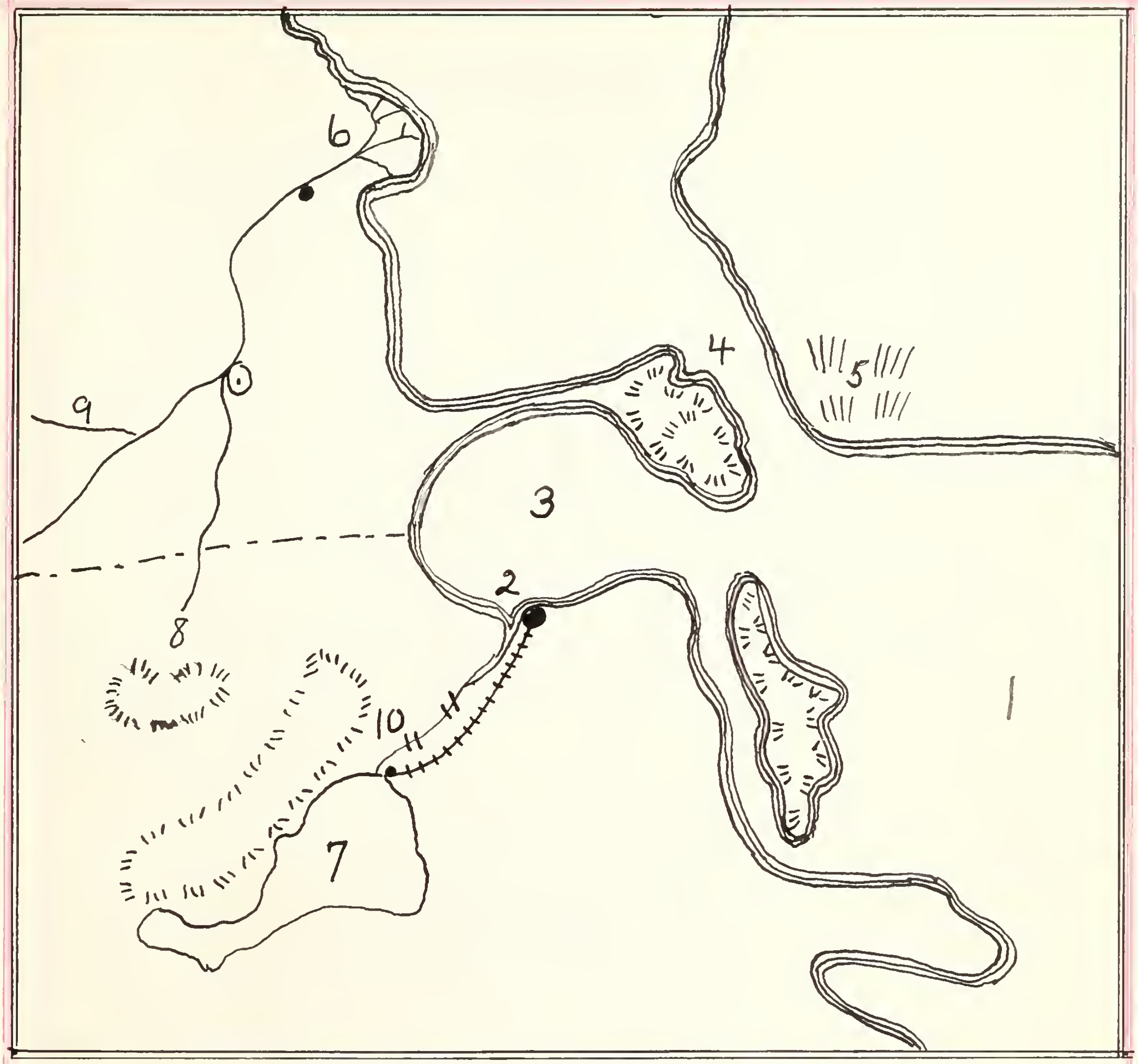
Railroad ____________________

3. Map Symbols and Definitions of Water Formations

Study the symbols and difinitions carefully before doing the work on the map sheet with follows.

Ocean	the whole body of salt water on the surface of the globe
Sea	one of the larger bodies of salt water, less than an ocean
Gulf	a portion of the ocean or sea extending into the land
Bay	an inlet of the sea, smaller than a gulf
Strait	a passageway or narrow channel of water connecting two larger bodies of water
Lake	a body of water nearly surrounded by land
 River	a large stream of water flowing through the land
 Tributary	a stream of water flowing into a larger body of water
Source of a River	the place where a river begins, usually in the hills or mountains.
Mouth of a River.	where a river joins a larger body of water

Current	the movement of water in a stream, from the source to the mouth
Upstream	going toward the source of a river, against the current
Downstream	going toward the mouth of a river, with the current
 Delta	low, level land around and including several mouths of a river
 Rapids	very swift currents of water in a river, usually making passage of large boats impossible
 Marsh	tract of wet swampy land



Map Symbols and Water Formations

Opposite the proper formation or definition write the number which represents it on the map. Be careful, not all formations or definitions are shown.

Lake __________	Delta __________
Ocean __________	Tributary __________
Bay __________	Marsh __________
Rapids __________	Mouth of a River __________
Source of a River __________	Strait __________

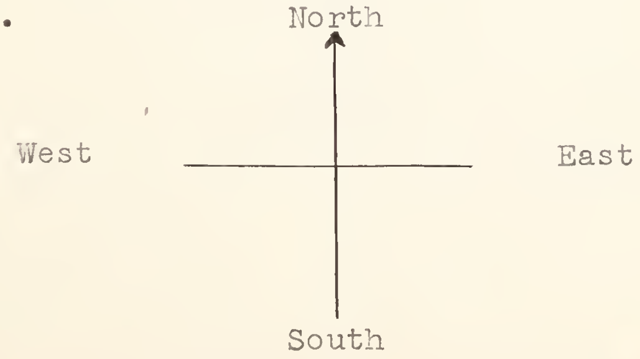
4. Map Directions

Many people confuse directions on maps. They think of north as "up" and south as "down." Remember that "up" means away from the center of the earth toward the sky. "Down" means toward the center of the earth. A map is similar to a photograph of the earth taken from far up in the sky. Looking at a map is like looking down toward the center of the earth. "Up" means away from the map, toward the reader's face.

For convenience in using flat maps north is generally shown as being away from the reader. South is toward or near the reader. East is toward his right hand, west is toward his left hand.

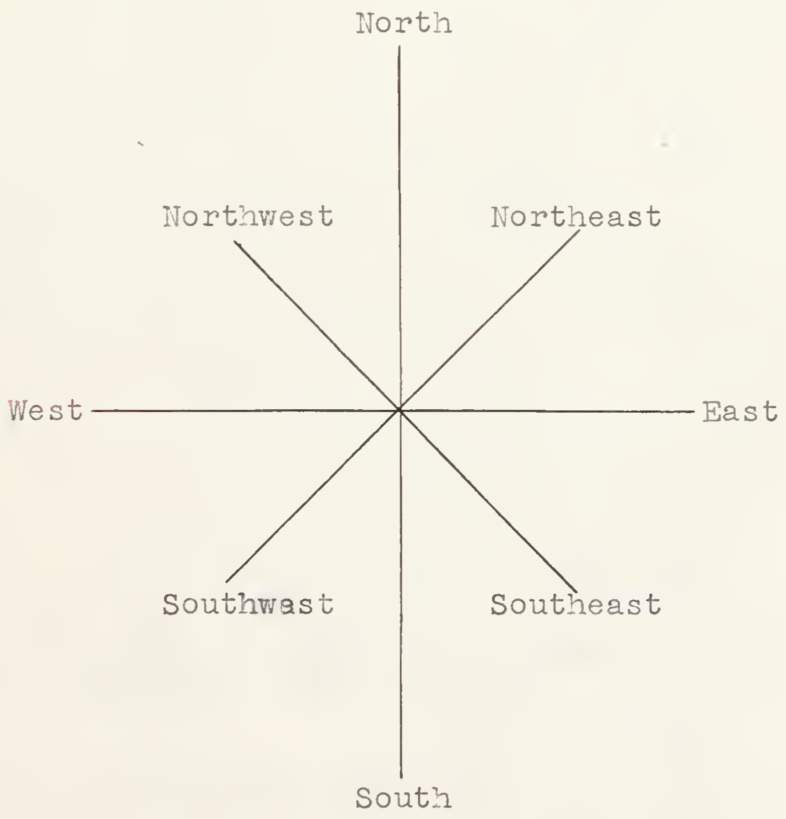
If the map reader can sit so that north shown on the map is pointing in the direction of the real north, it is easier to understand the other directions. Then the reader will be facing north with south at his back, east on his right, and west on his left.

There are eight common directions which are important in map study. The four common directions are north, south, east, and west.



Between the four main or cardinal points of the compass are four other common directions. They are called northeast, southeast, southwest, and northwest.

Half way between north and east is called northeast.
Half way between south and east is called southeast.
Half way between south and west is called southwest.
Half way between north and west is called northwest.

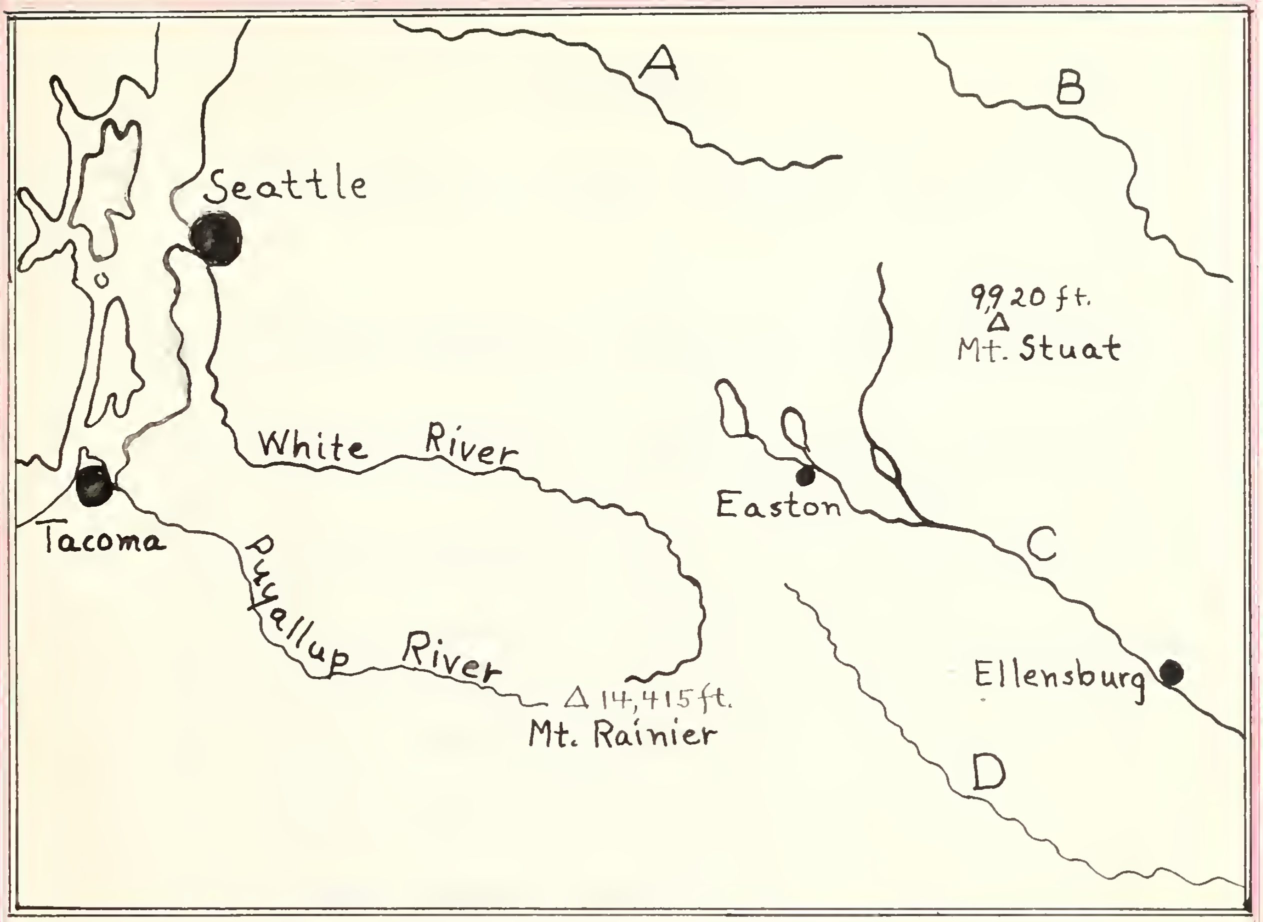


Directions

Read the selection on directions carefully before doing the following exercises.

Cross out the word or phrase which is incorrect in the following sentences.

1. The sky is (up, down) from the earth.
2. (Up, down) is toward the center of the earth.
3. There are (six, eight) directions which a map reader should know.
4. North on a map (always, not always) faces true north.
5. Map makers show south on a map as (toward, away from) the reader.
6. On a map east is shown on the (right, left) of the map.
7. The direction between east and south is called (southwest, southeast).
8. The direction between north and east is called (eastnorth, northeast).
9. If one faces north, west is toward his (left, right) hand.
10. If one faces south, north is at his (right side, back).



Adapted from map on page 88 of W. R. McConnell, Geography Workshop, Rand McNally, 1945.

Directions

Find the answers to these questions on the preceding map.

1. In what direction is Seattle from Mt. Rainier?_____

2. In what direction is Easton from Mt. Stuart?_______

3. In what direction is Mt. Stuart from Ellensburg?____

4. In what direction is Tacoma from Easton?___________

5. In what general direction do the rivers called A, White, and Puyallup flow?___________________________

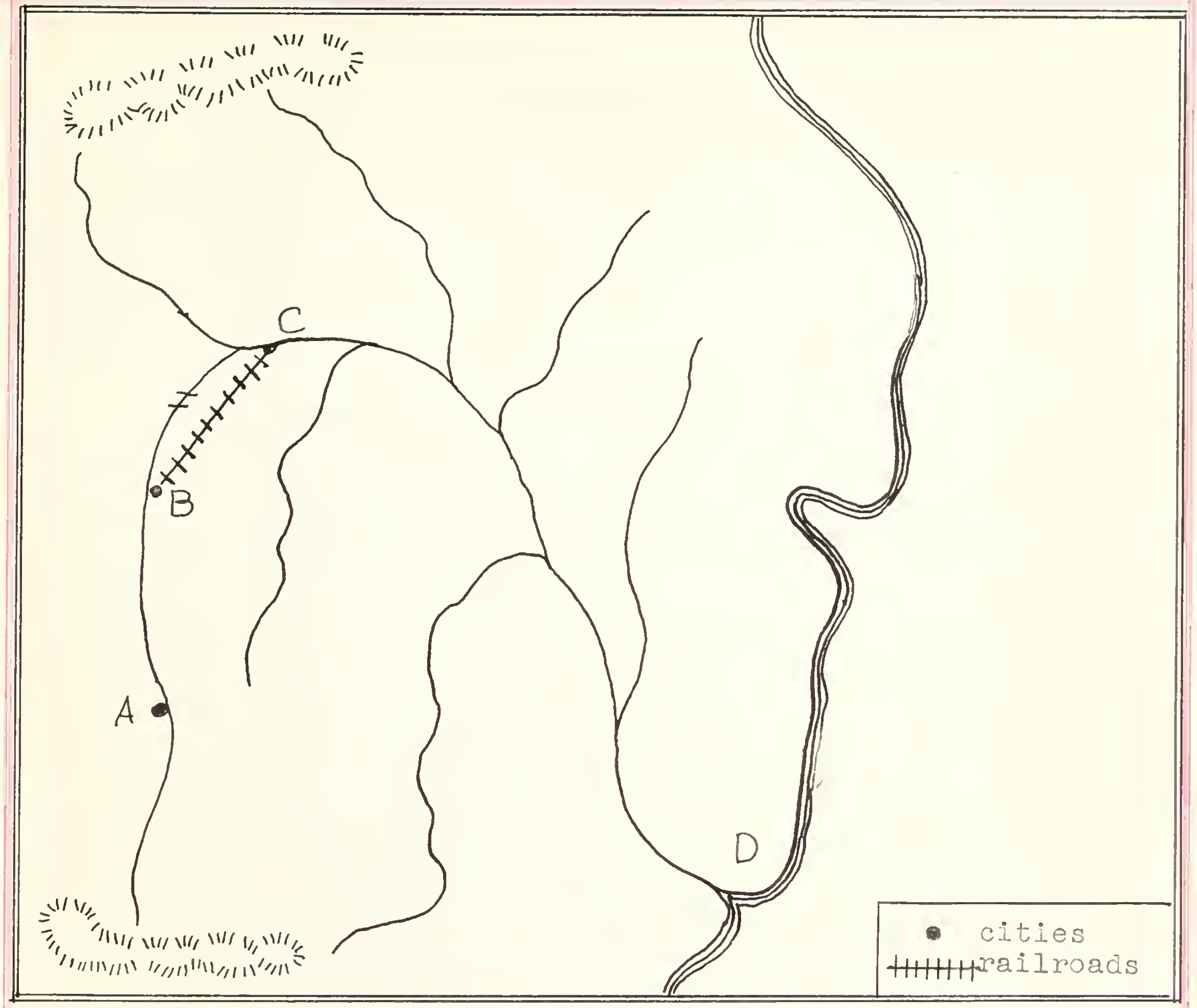
6. In what general direction do the rivers called B, C, and D flow?______________________________________

7. In what general direction is River A from Mt. Rainier?____

8. Which town is nearer the source of River C, generally east of Tacoma, Easton or Ellensburg?________

9. Which is farther south, the source of the Puyallup River or the city of Tacoma?_______________________

10. In what direction from Mt. Stuart is the land nearest sea level?___________________________________


C
B
A
D
● cities
railroads

Review Exercise

Use what you have learned in the first four lessons to help you in answering the questions below. Use the preceding map.

1. In what direction on the map is a large body of water?________________ (Color it blue)
2. In what direction on the map is the source of the longest river?________________
3. In going from A to B does one go upstream or downstream? ________________
4. How many tributaries flow into the main river?______
5. In going from D to A by water does one travel upstream or downstream?__________________
6. Is the mouth of the river higher or lower than the river near A? ________________
7. In what two directions from B are the highest land formations? ________________and________________
8. In what direction does the current flow from A to B? ____________________
9. What prevents large boats from running between B and C? ___________________
10. Which boat trip requires more fuel, that from D to C, or from C to D? ________ to ________

5. Physical Maps - Relief Maps - Elevation shown by Color Contour Lines

Physical Maps show land formations such as rivers, mountains, lakes, islands, etc.

Relief Maps show in addition to physical features, the height of the land. This is also called elevation. Elevation means how high the land is above the level of the sea.

Elevation is generally shown by color. The same color bands are usually used on maps.

Dark green on a map may mean the land measured from sea level to a point 500 feet in height. The 500 feet means that distance above sea level. This land may or may not be flat or gently sloping, but does not reach over 500 feet up.

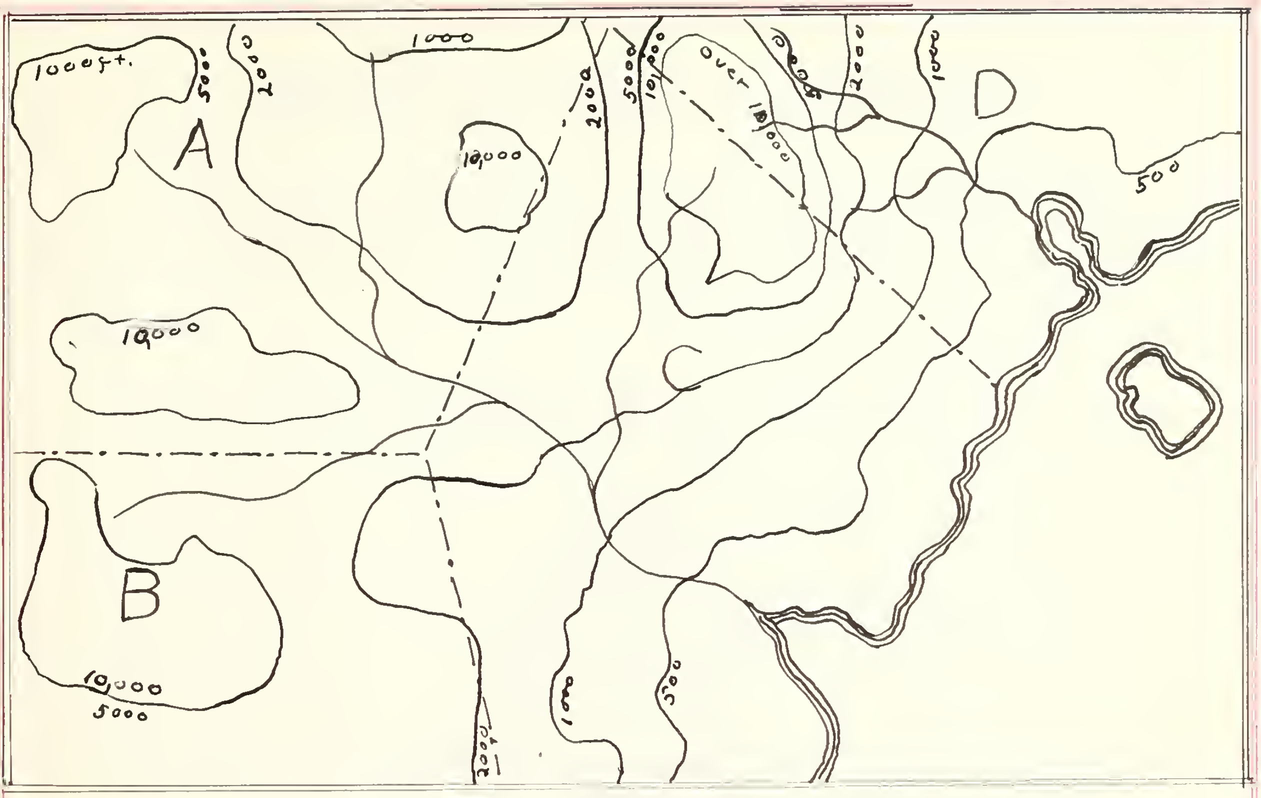
Light green may be used to show land from 500 to 1000 feet in height. Elevation from 1000 feet to 2000 feet may be colored yellow; that from 2000 feet to 5000 feet light brown. Dark brown may indicate an elevation of from 5000 to 10,000 feet. All higher than that may be shown with red. Notice that the distance intevals are not uniform in size. To have them so would require a confusing number of colors.

Contour Lines show elevation. They may or may not be used with color. When used with color bands, contour lines separate colors. They show equal heights above sea level. Sea level is the 0 (zero) contour line. The next line would be the 500 foot contour line. One cannot tell where these

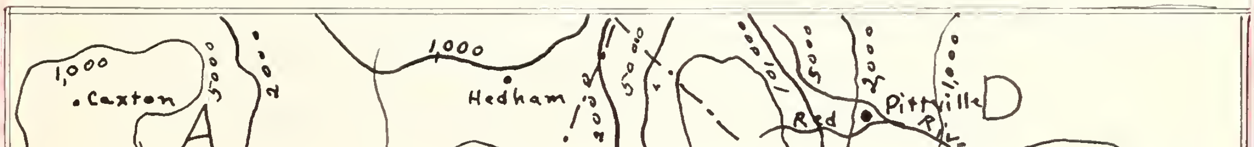
changes in elevation occur when traveling over the land as the change is not perceptible. One would need to carry an instrument which could measure altitude to know exactly how high above sea level he was at any given point.

Can you see that the nearer together the contour lines are, the steeper the slope? In fact, if the land rose very gradually over a great distance the lines would be far apart. Whereas, if the land was steeply mountainous they would be almost touching.

Contour lines bend upstream. Low land follows the river. This results from the stream washing away its banks over long periods of time.



1. Relief



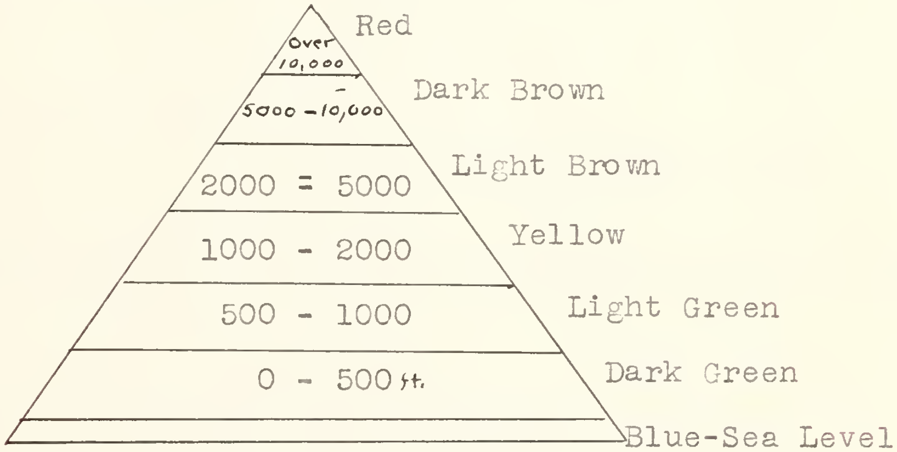
2. Physical - Political

-·-·-·-State Boundaries A-B-C-D States

Contours - Elevation - Color - Location

After reading about color and contour lines on maps, work out the following problems using the maps on Page 28 to help you.

1. Using this coloring scale, color Map No. 1.



2. The highest mountain is ______________________________
3. The towns located on the highest land are __________
   ____
4. The river which flows down the steepest slope is the ____
5. The elevation of the land around Colberg and Danboro is ________________feet.
6. The height of Mt. Black is _________________, of Mt. White is ____________________.
7. The elevation of the town of Biton is __________ft.
8. The source of the Red River is ___________ feet above sea level.

Location - Map Symbols - Interpretation

Use Map No. 2 to help in answering these problems.

1. The capital city is ______________________________.

2. The longest river is _____________________________.

3. The river which has its mouth at Colberg is the ______________________.

4. The _______________ River has three tributaries.

5. These states have three rivers flowing through them. ____

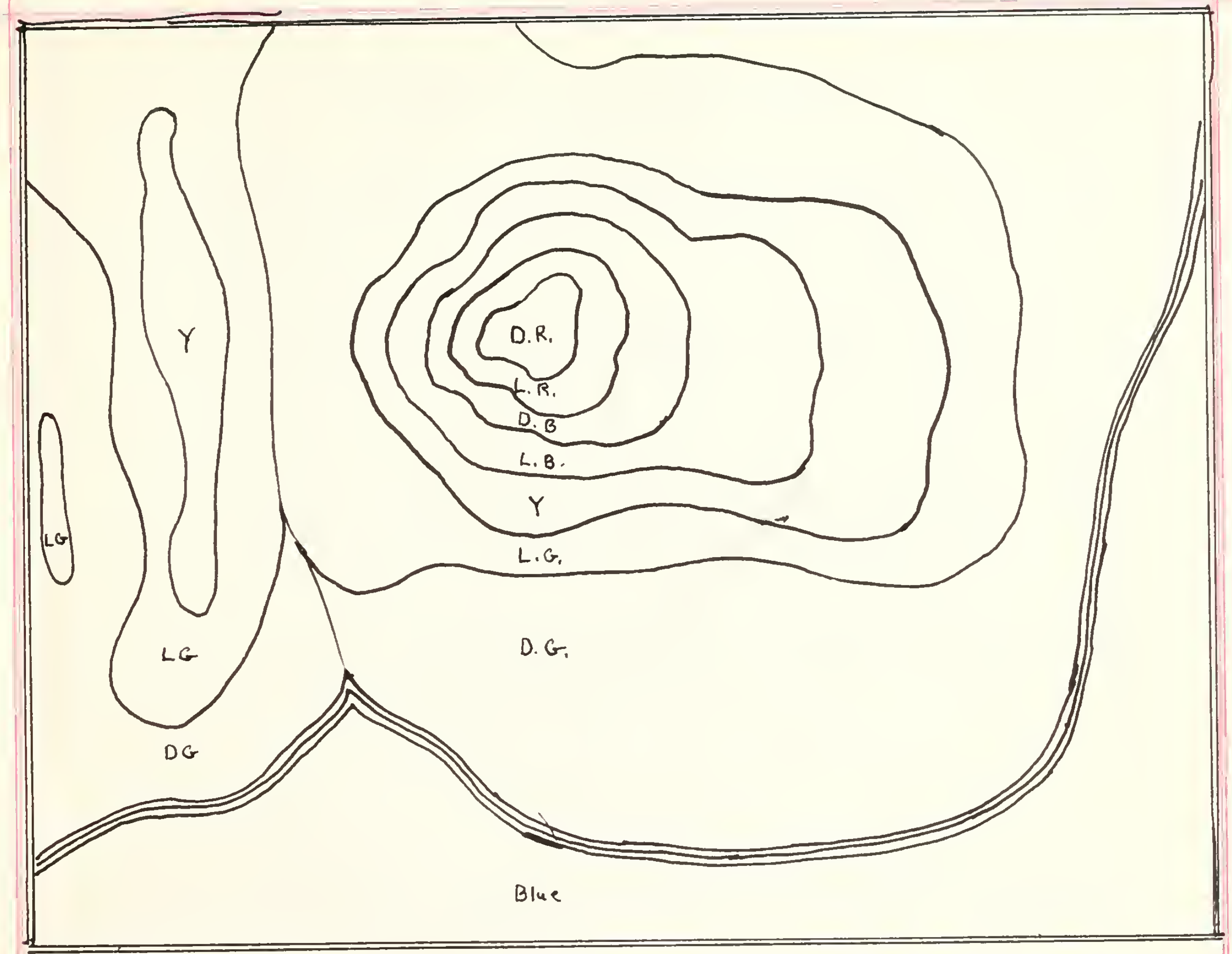
6. This state has one river flowing through it ______

7. Bananas might be grown near Danboro, but not near Irontown because _______________________________ ____ ____.

8. A town having the same elevation as Hedham is _____________________.

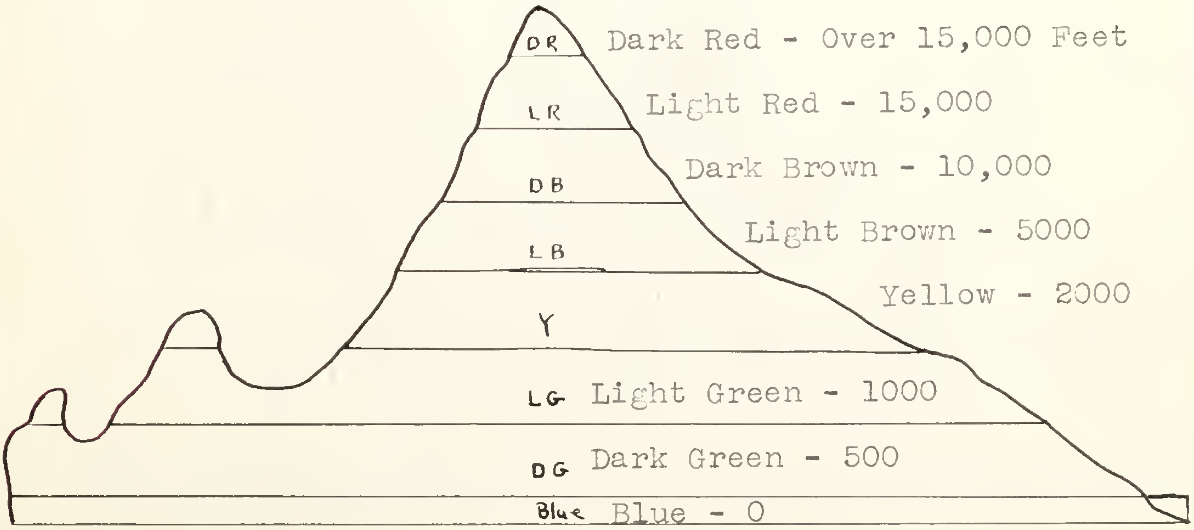
9. Biton is about as far above sea level as _______.

10. The river having its source over 10,000 feet above sea level is the _____________________ River.



6. Colored Contour Bands

Color the above map using the key below.



Cross Section

6. Colored Contour Bands

Use the colored contour diagrams on Page 31 to help you in answering these questions.

1. In what direction from the mountain is the river? ____________________

2. Use the upper diagram. The steeper side of the mountain is the east or the west side? __________

3. In what direction from the mountain is the largest region of low land? ____________________

4. How high is the mountain? ____________________

5. How high is the hill which is colored yellow? _____

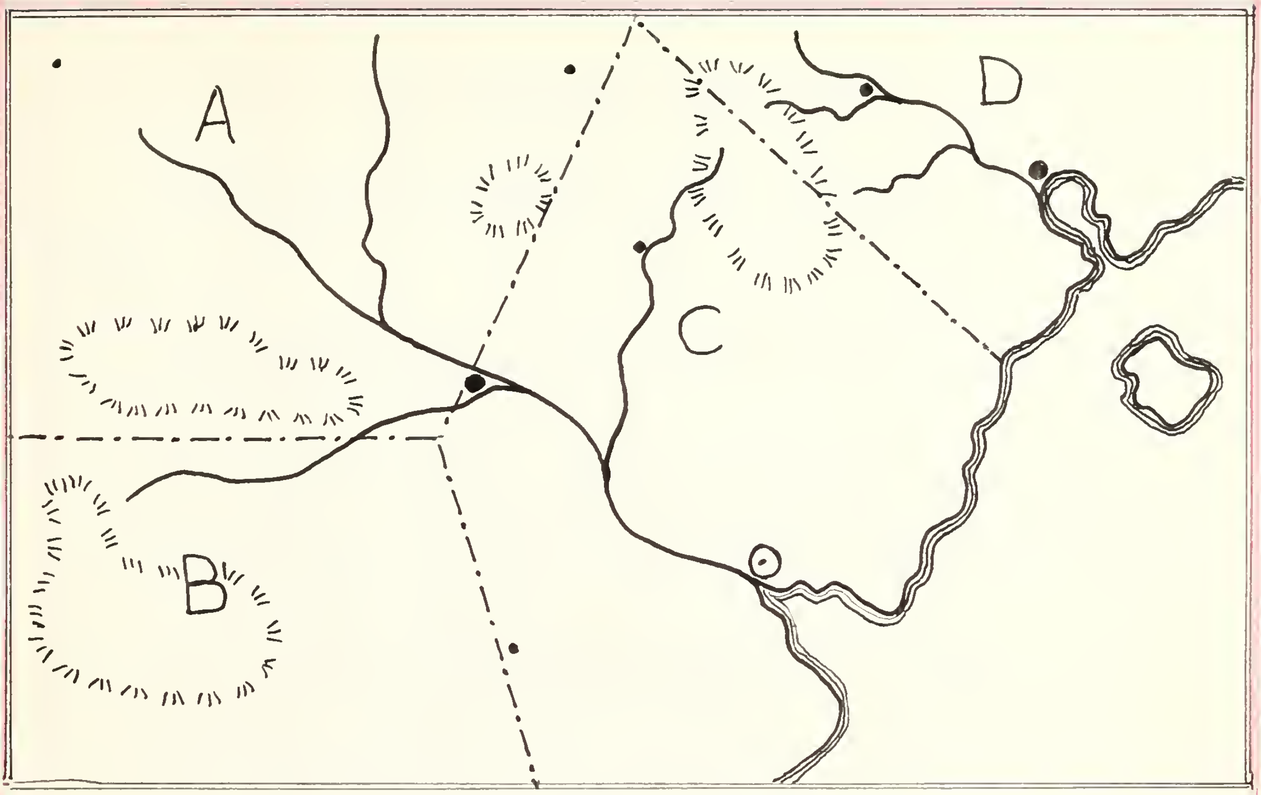
6. In what direction from the hill is the lowest valley? ____________________

7. On what side of the mountain is a large region which is from 2000 to 5000 feet above sea level? ______

8. How high is the land at sea level? ______________

9. Which color shows land which might be covered with snow all year round? ____________________

10. Which color might indicate jungle regions if shown along the Congo and Amazon Rivers? ____________



7. Physical - Political

— · — · —	State Boundaries	ᐱᐱᐱ	Mountains
⊙	Capital City	〰	Rivers
●	Large City	≈	Coast Line
•	Town	A - B - C - D	States

States - States are political sub-divisions of a country. Each has its own local government but joins with others for the common good of the whole.

This imaginary map shows four such states designated by letters of the alphabet, A, B, C, and D.

7. Physical - Political

Use the map on Page 33 to aid in answering the questions below.

1. In what state is the largest single mountain range? ____________
2. What two states share the same mountain range? _____
3. In what direction does the river having its source in A, flow? _________________
4. In what states might minerals be found? ___________
5. Which state seems to be most thinly populated? ____
6. Which state has the longest coastline? ____________
7. List three possible important occupations of the people of the state capital of C. _______________
   ____
   ____
8. How do you know that the land in A is higher than the land bordering the coast in C? _______________
   ____
9. In what three states does the same river tributary flow? ____
10. In what two states do rivers have their source in mountain regions? _______________________________

8. Scale of Miles

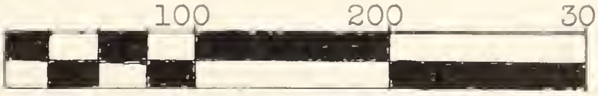
As maps are tiny plans of areas of varying expanse the actual size of the area cannot be shown. Therefore, a small portion of a map may represent a large area. In order to really understand the meaning or story of a map we must know distance. Distance on a map is shown by the use of the scale of miles. Drawing to scale means that a certain distance on a map stands for a certain distance on the earth. Many different scales are used and it is important to look at the scale of miles on any map before attempting to study it.

On some maps the scale is 10 miles to an inch. Others may use 25 miles to an inch, others 60 miles to an inch, some 500, some 1000, or any other number as the map maker wishes.

This means that an inch space on the map picture might represent ten miles on the earth itself. This would show a map of a small area showing many details.

A map using a scale of 1000 miles to an inch would cover a great deal of the earth's surface on which few details could be shown.

Sometimes the first inch of the scale of miles is divided into smaller sections so that short distances can be accurately measured. In the sample below each sub-division stands for 25 miles.

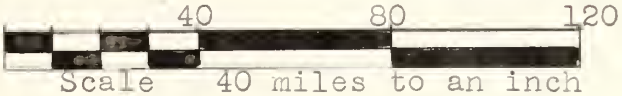


Scale = 100 miles to an inch.

Scale of Miles

Here is a suggestion for measuring distances on maps. Cut a narrow strip of paper or cardboard. Place it on the map so that it passes between the two points to be measured. Mark the paper strip at each point. Then lay it along the scale of miles. The distance can then be determined.

Using the scale of miles shown below, work out the problems. Give the distance which each line represents.



Scale 40 miles to an inch

1. __________ _____miles

2. _______________ _____miles

3. _________________________ _____miles

4. _____ _____miles

5. ___________________________________ _____miles

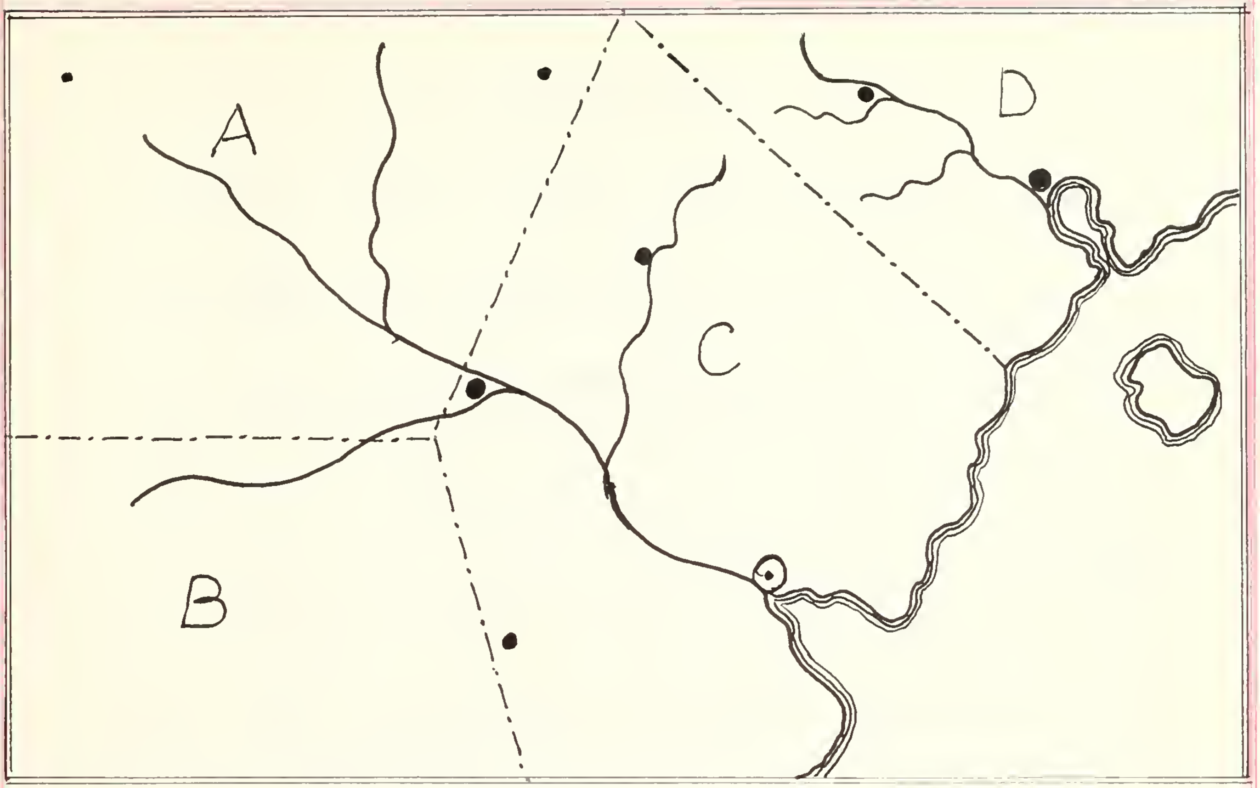
6. __ _____miles

7. ______________________ _____miles

8. _______ _____miles

9. ____ _____miles

10. ____ _____miles



9. Political Maps

—·—·—·—·— State Boundaries

A - B - C - D States

⊙ Capital City

● City

• Large Town

1 inch = 50 miles

25 50 75 100

Scale of Miles

9. Political Maps

Write on the map on Page 37 when asked to do so.

1. Name the states which border on C. ________________
2. Place the name Colberg beside C's capital city.
3. Place the name Danboro beside D's chief city.
4. There are __________ towns or cities in the state of C.
5. Place the name Biton beside the town nearest the state of B.
6. Place the name Farwell beside the town on the border of A and C.
7. Place the name Caxton beside the town in the northwest corner of A; the name Hedham beside the town on the northeast corner of A.
8. Place the name Pittville beside the town which is upstream from Danboro.
9. Place the name Irontown beside the town which is about 30 miles from the source of the tributary in the state of C.
10. Label the longest river, Green River.

Political Maps

Use the same map as for the previous exercise. Write answers on the map or on this paper.

1. A boat sailing from Farwell to Colberg would be going upstream or downstream? ________________
2. Which has the better harbor, Colberg or Danboro? __________ Why? ____________________________
   ____
3. Place an X on the spot which you think might be a very pleasant summer home for the people of Danboro.
4. Using the Scale of Miles, tell about how far it is from Colberg to Biton. ______________________
5. How far is it from Caxton to Farwell? ___________
6. How far is it from Pittville to Danboro? __________
7. Which state has very few people? ____ What shows this? ______________________________________
8. In what general direction do the longer rivers flow? ______________________________________
9. Which states have no seacoast? ________________
10. What business reason should cause A and B to remain friendly with C? ____________________________
    ____
    ____

10. Weather and Temperature

Weather very directly affects people's lives, vegetation,and animal life. Man must adjust his way of living to the weather. He wears different clothing in cold regions than in warm sections. He eats different food, he lives in different types of homes. His work is often determined by the weather of the place where he lives. He even changes his form of play to suit the weather.

A weather or temperature map may reveal much about elevation, vegetation, and occupations of the people of the land. Such a map will vary from month to month as the weather varies. By studying the temperature of any given region in any one month, several facts about the land can be determined.

A study of the lines on a temperature map will give a clue to the height of land of the region. As one travels up to a higher region the temperature lowers. High mountains are usually so cold on their summits that snow can be seen the year round. The growth of vegetation is retarded as the elevation increases.

Low land near these same high mountains may be very hot, as is the case with areas near the equator. Winds from the oceans may cool land on one side of the mountains as well as keep the land moist by carrying rain clouds over the area. The same winds blowing over the mountains may lose all their moisture on one side of the range so that the other side is

dry and arid. Such conditions may result in low areas on one side of the mountain being wet and fertile while that on the other side is dry and desert.

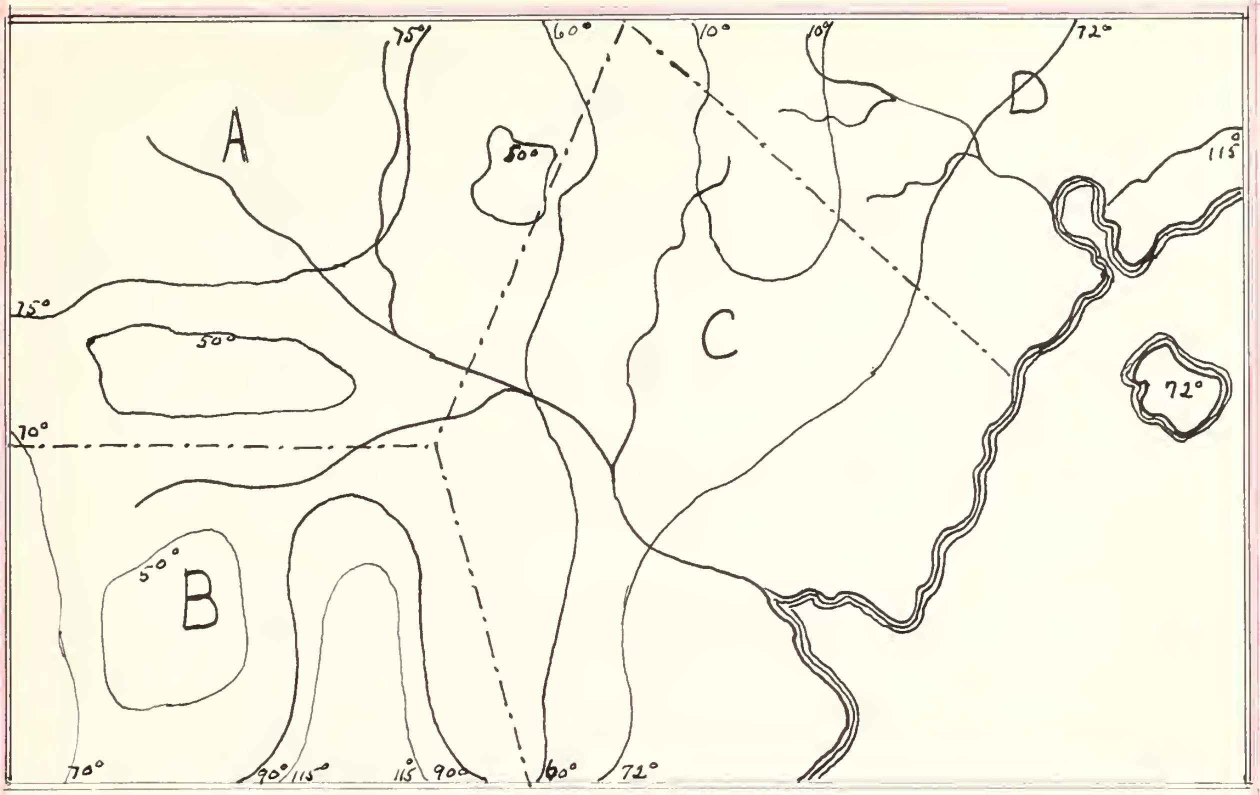
Weather and temperature maps of any area would be different at different seasons. They are based on the average temperature of the designated period.

That is, if a weather map showed the weather of a one week period it might be the average for the week.

If a temperature map showed the temperature of a one week period it might be determined something like this.

Temperature at noon on Monday is 70°, on Tuesday 76°, Wednesday 72°, Thursday 60°, Friday 68°, Saturday 80°, and Sunday 85°. Adding these numbers together and dividing by the number of days measured (seven) will give the average temperature.

$$\begin{array}{r} 76^{\circ} \\ 76 \\ 72 \\ 60 \\ 68 \\ 80 \\ \underline{85} \\ 511^{\circ} \end{array} \qquad\qquad \begin{array}{r} 73^{\circ} \\ 7\overline{)511} \end{array} \qquad \text{average}$$



Temperature

July

Temperature

Carefully study the section on Weather and Temperature before answering the questions. Use the map on Page 42.

1. What state contains a desert? ____________________
2. What two states contain very high mountain regions?

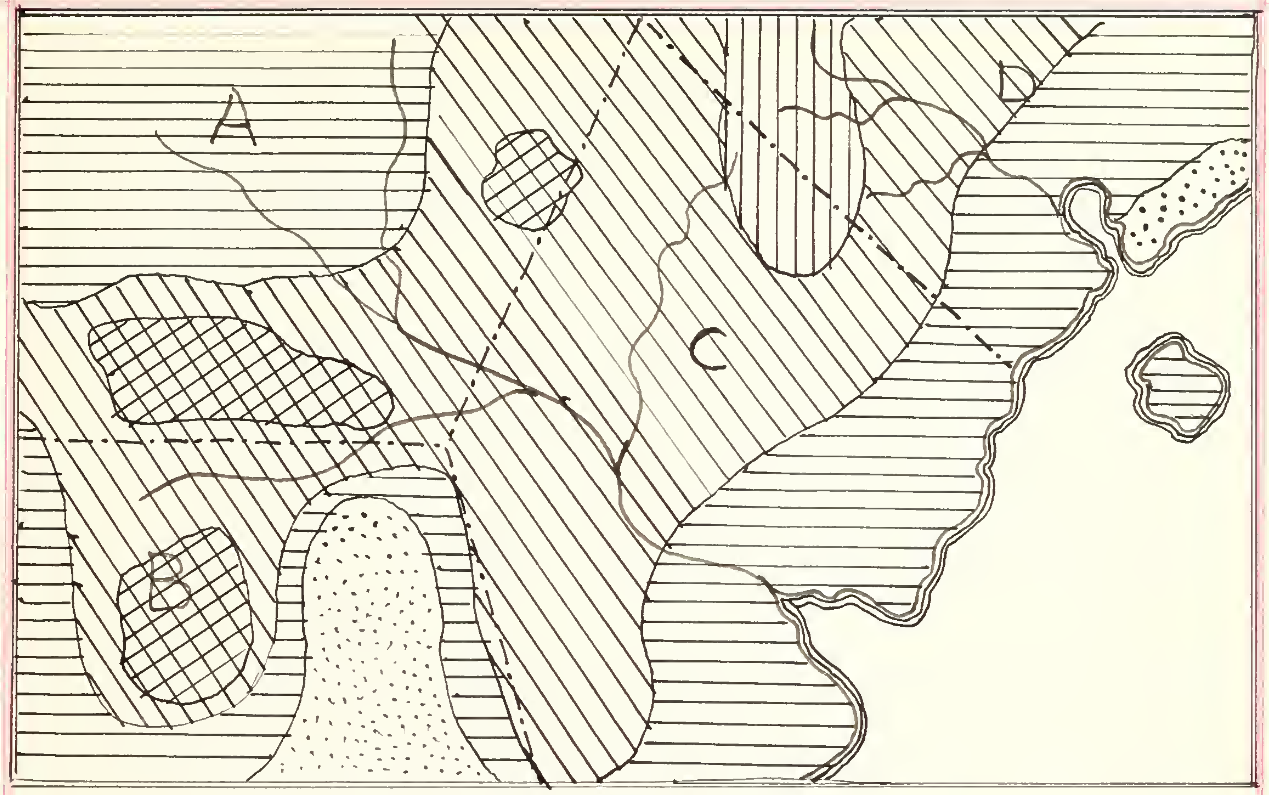
   ____

3. What states have mountains? ______________________
4. What states have temperatures suitable for vegetable farming? ______________________________________
5. What part of the state of C has low land? ________
6. What state has land which is very steep, rising from very low to very high in a small area? _____
7. What state has two mountains? ____________________
8. Which side of the state of B has warm wet weather?

   ____

9. Which side of the state of B has hot, very dry weather? _______________
10. Give a reason why the river in the state of D might contain very cold water near its source. ________

    ____



11. Weather

September

░ Hot ▤ Mild ▧ Cool

▦ Cold ▥ Very Cold

11. Weather

Study the weather map on page 44 very carefully. Write on the map.

1. Place an M where a very high mountain is located.
2. Place an H where three other mountains may be found.
3. Place a D in a place which might be a desert.
4. Place a T where a tropical jungle region might be found.
5. Evergreen trees grow well in a cool climate. Place these symbols where such trees might grow.
6. Place this symbol where grazing might be common.
7. Place this symbol where vegetables can easily be grown.
8. Place a square □ in the states which have four kinds of weather.
9. Place the letter F in the state which has the greatest population.
10. Place a circle ○ in two areas where very very few people live.

12. Air Currents

Air currents may be warm or cold and so influence the temperature of the land over which they blow.

They are sometimes blocked by mountains and in trying to rise over them may drop most of the moisture which they carry. In this way one side of a mountain range might have much more rain than the other.

Air currents directly affect aviation, especially in mountainous regions.

Water becomes cool and heats up slower than land so air currents from over the water sometimes cool the land in summer and warm it in winter.

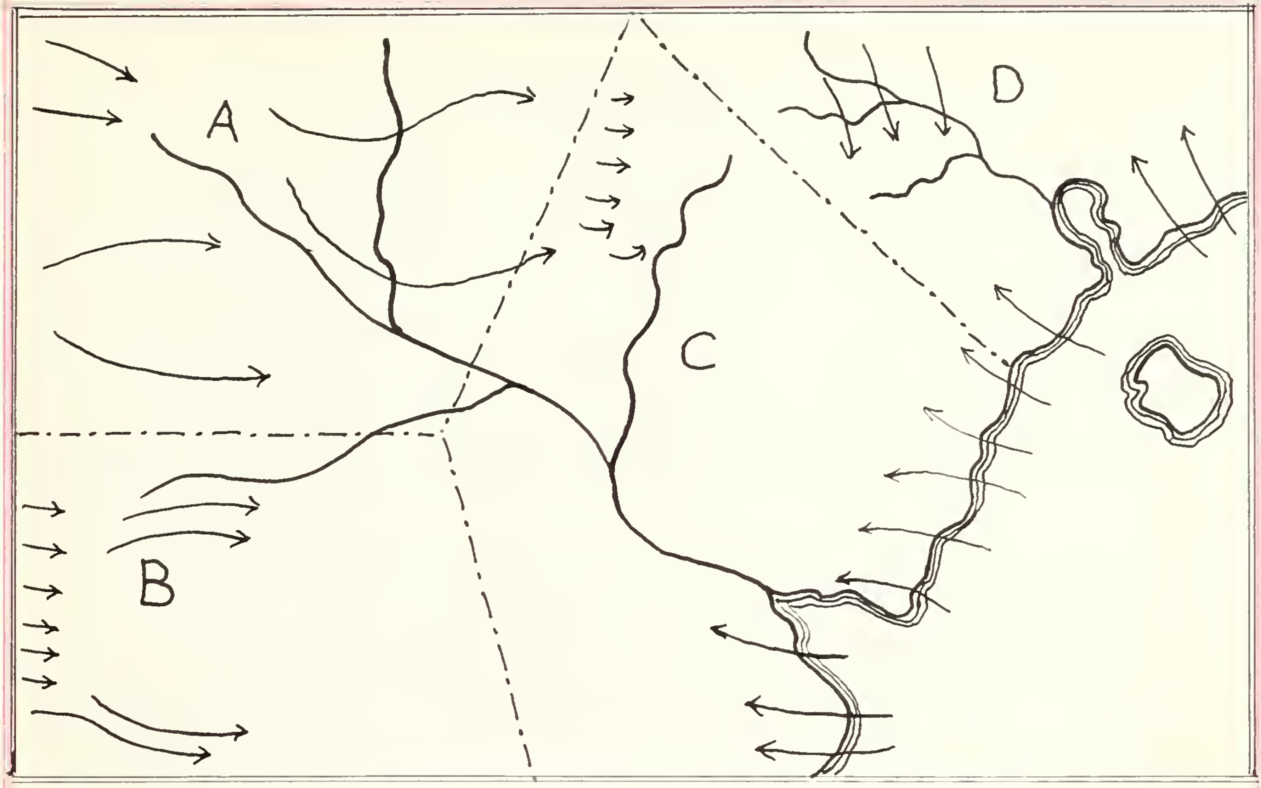
. . . .

Study the above paragraphs and the map on page 47, then answer the following questions.

1. What part of the states of C and D are coolest?

   ____

2. What land formation may be in the center of B? ____
3. Which side of B is rainy? ______________________
4. Which side of B is quite dry? ____________________
5. Why might flying an aeroplane be dangerous in northern C? ______________________________
6. Why is the island near the border of C and D probably a good summer resort? ________________



Air Currents

13. Rainfall

In some places in our world no rain falls for years at a time. In others as much as 120 inches of rain has fallen in a week. Such conditions are extreme.

A rainfall average of around 40 to 50 inches distributed fairly evenly over a year provides the best conditions for comfortable living.

Areas of medium rainfall attract people. Abundant food can be raised and grown, forests thrive, water power can be obtained; suitable living conditions are assured. In short, the amount of rainfall has a very direct effect on the lives of people.

In regions where little or no rain falls a dry or desert condition is found. Water must be imported or carefully conserved for man's requirements. Animals and vegetation are scarce.

Areas having extremely heavy rainfall are usually jungle regions. Floods frequently occur. Vegetation grows so rapidly and densely that it forms a serious obstacle to man's progress.

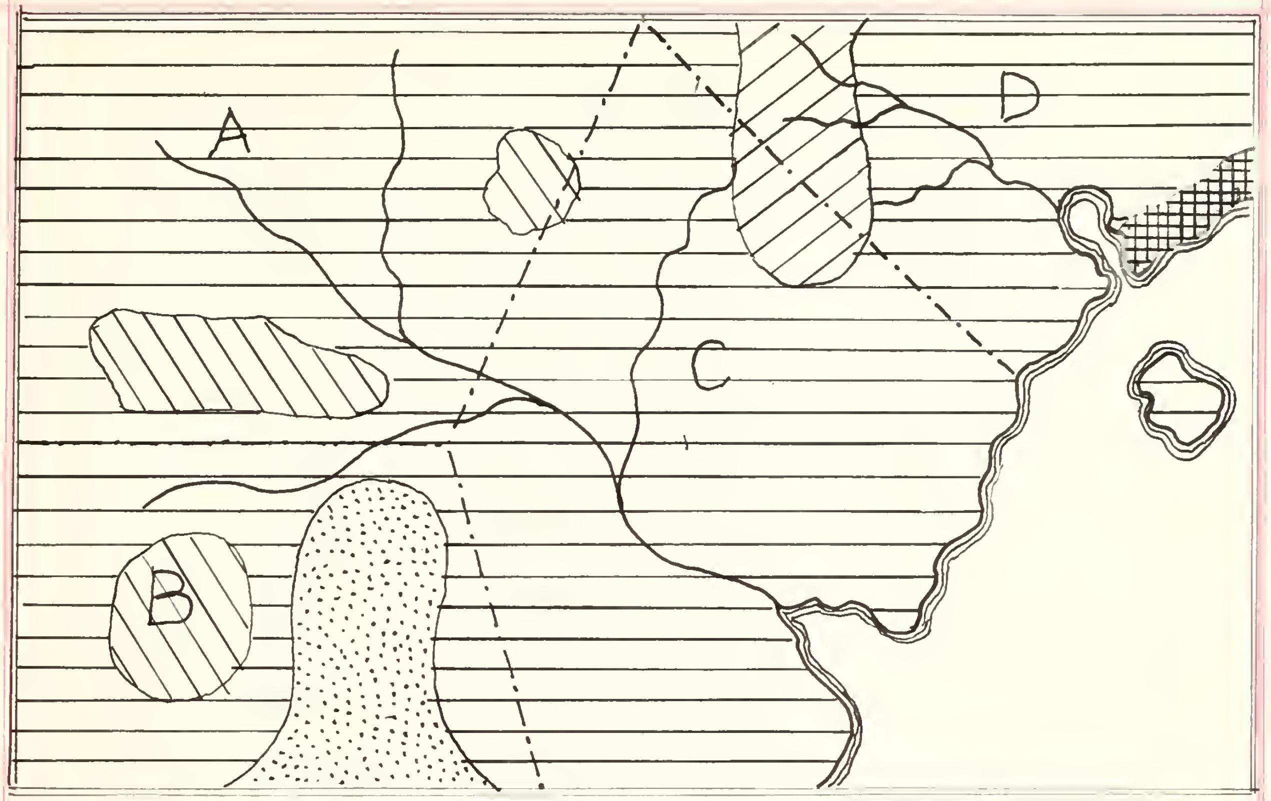
In studying the section on air currents you read of how air carries moisture over the land. As the currents of air rise in highland regions and become cooler the moisture condenses and falls as rain. Therefore less rain reaches the higher slopes. The air passing over the mountains has lost most of its moisture so the land on the other side will be dry, having

little rainfall.

If one can determine the direction from which the prevailing winds blow he can figure out the condition of the land, somewhat of the population density, the vegetation, and the rainfall of the area over which the winds pass.

Over many sections of our world the winds blow in one general direction most of the time. It may vary at times but for the most part is constant. Such winds are known as prevailing winds. This can be easily shown by looking at trees in such areas. They will have a tendency to lean in one direction and most of the branches will be on one side.

Sailors depend on such winds, called trade winds, to aid them in their travels over the oceans of the world. The trade winds also carry moisture to the land in the form of rain.



Rainfall

Inches of rain per year

▒ 0-10 inches ▨ 10-20 inches ▧ 20-40 inches

▤ 40-80 inches ▦ 80 or more inches

Rainfall

Read the section on rainfall very carefully. It will help you in answering the questions below. Use the map on Page 50.

1. Which states have the greatest area for agriculture?

   ____

2. What state contains a desert? ____________________

3. Which state has a wet jungle region? ______________

4. Which states probably have very high mountains? ___

5. In what state might bananas be grown? ____________

6. From what direction do the winds probably blow most of the time in the state of B? ______________

7. Are the areas marked 20-40 inches of rain probably high or low lands? ____________________________

8. Why does the state of B have so little rain in its eastern section? ______________________________

   ____

9. Is the area in D marked 80 or more inches probably low or high land? ____________________________

10. In what states might forests be found? ___________

14. Ocean Currents

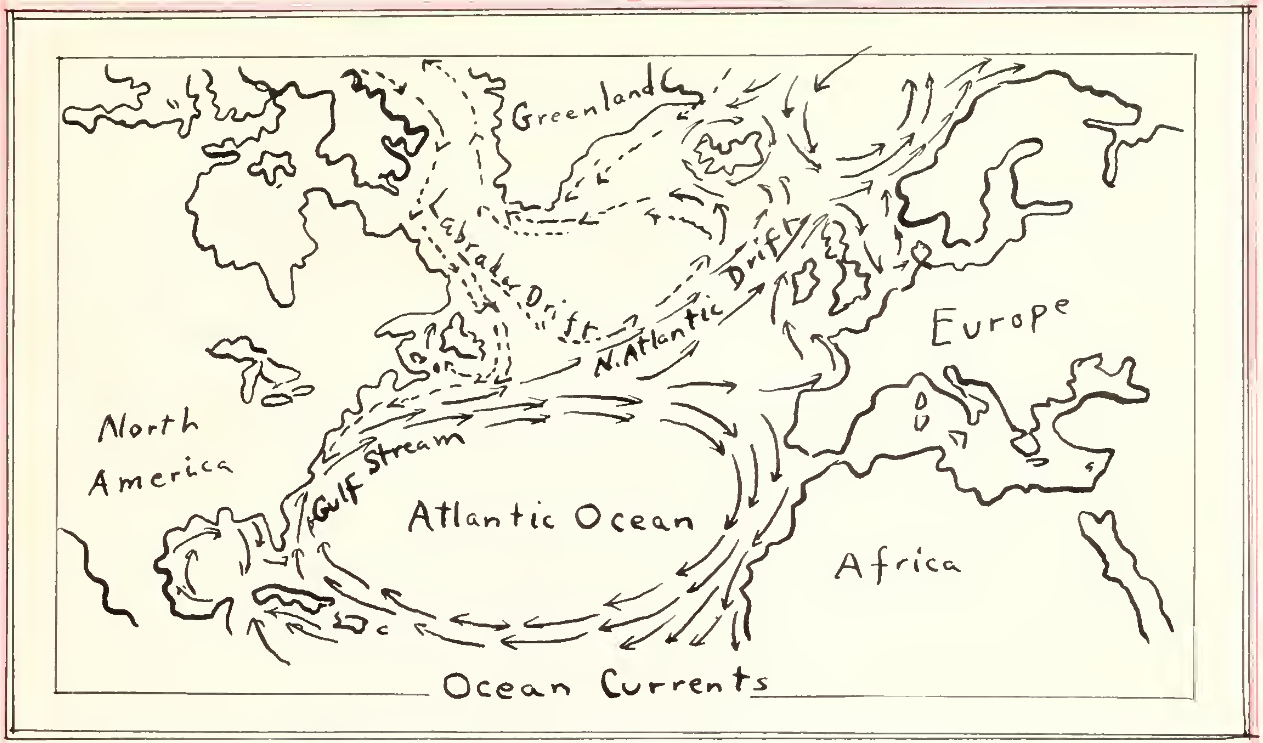
Have you seen paper flying in the wind? It does not fly in a straight path. So it is with leaves or papers floating on bodies of water. There are currents or definite movements of water in certain directions in our seas and oceans just as there are air currents over both land and sea.

These currents of water and the air above them have a great influence on the climates of lands which they border.

A cold ocean current and its accompanying cold air current will cause the land by which it flows to become cold. So too, a current of warm water and air will cause nearby land to be warm.

These currents also affect shipping. Ships will, if possible, follow the direction of water and air currents. The current helps increase the speed as well as save fuel.

The three strong ocean currents of the Atlantic Ocean are the cold Labrador Current, the warm Gulf Stream, and the warm North Atlantic Drift.



Adapted from the map on page 149, Meyer, J. G., Hamer, O. Stuart, and Grisso, Lillian, The Old World and its Gifts, Follett Publishing Co., Chicago, (1942).

Ocean Currents

Use what you have learned in reading the section on air currents to help you in answering the questions. Use the map on page 53.

1. In what general direction does the Gulf Stream flow between Florida and Spain? ____________________

2. In what two general directions does the Labrador Current flow along the coast of North America?

   ____

3. Explain why northeastern United States has cold winters. ________________________________

   ____

   ____

4. What currents influence the climate of the British Isles? ________________________________

5. What type of climate would be found in Spain and northwestern Africa? ________________________

6. Norway is as far north as Greenland. Why is Norway's western climate temperate while that of Greenland is extremely cold? __________________

   ____

   ____

7. Icebergs endanger shipping during the winter along the northern edge of the Gulf Stream and North Atlantic Drift. What current brings them that far south? ______________________________

8. What current causes the icebergs to melt as they proceed southward? ______________________________

9. What is the usual climate of the Gulf of Mexico?

____

10. If you traveled in a sailboat from Cuba to Africa and back and followed the current, which voyage could be done quicker, the one from east to west, or from west to east? ______________________

____

15. Climate - Air Currents - Ocean Currents - Elevation

The climate of a land is influenced by its position on the globe. It is also affected by its nearness to oceans, its land surface, and the prevailing winds. We can expect low lands near the equator to be hot, but high lands near the equator may be cool or even cold. Lands near the poles are generally cold.

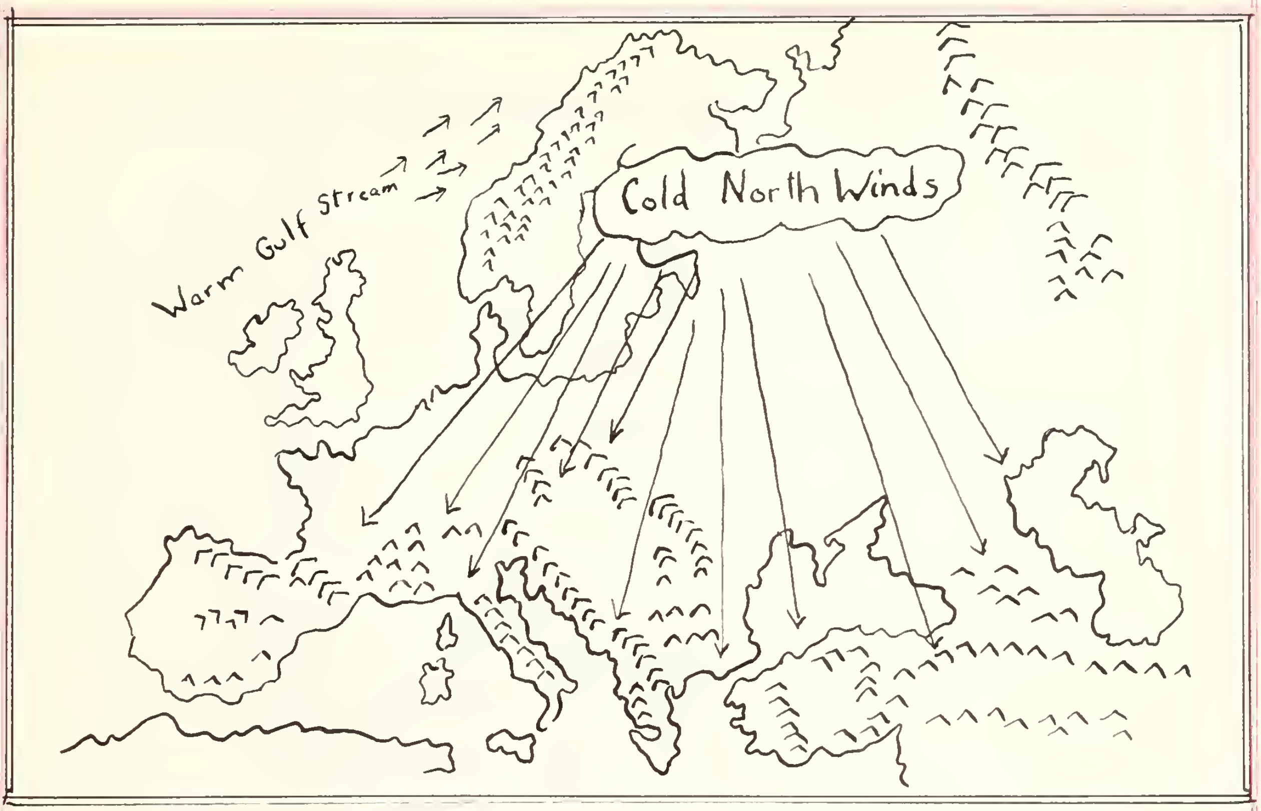
The nearness of large bodies of water to land has an effect on the climate. It takes longer for water to cool off than it does land. Therefore land near water will be warmer than land far inland because air currents from the water are warmer.

In the summer it works just the other way. Because water becomes warm slower than land does, the cool air currents keep land near water cooler.

The temperature of land is also affected by warm or cold currents of water. Countries of the same latitude may have different climates due to the nearness of warm or cold ocean currents.

Mountain ranges influence climate by forming a protecting wall shutting out cold or hot winds, thus affecting the climate on the other side of the mountain range.

Rain carrying clouds drop their moisture when rising toward the tops or summits of the mountains. Therefore the land on the other side of the range gets very little rain.



Climate - Air Currents - Ocean Currents - Elevation

Adapted from the map on page 148, Meyer, J. C., Hamer, O. Stuart, and Grisso, Lillian, The Old World and Its Gifts, Follett Publishing Co., Chicago, (1942).

15. Climate - Air Currents - Ocean Currents - Elevation

Read the preceding paragraphs carefully, then answer the questions below. Use your geography textbook maps for place names. Put the answers on the map on Page 57.

1. Place an A by the Kjölen Mountains. (in Scandinavia)
   Place a B by the Pyrennes Mountains.
   Place a C by the Alps Mountains.
   Place a D by the Carpathian Mountains.
   Place an E by the Caucasus Mountains.
   Place an F by the Ural Mountains.

2. Use a political map and name five of the larger bodies of water which almost surround Europe. Print the names of these bodies of water on the map.

3. What part of Europe is most mountainous? __________

4. Which side of the Kjölen Mountains has plenty of rain? ______________________________

5. Which is warmer in winter, Sweden or western Norway?
   ____

6. Cold Labrador is as far north of the equator as England. Why is England so much warmer? ________
   ____

7. Southern Europe is very much warmer than Central Europe. Give two reasons why this is so.

____

____

____

____

8. Give a reason why France has much more rain than Russia. ________________________________

9. From what direction do the cold winds blow across Europe? ________________________________

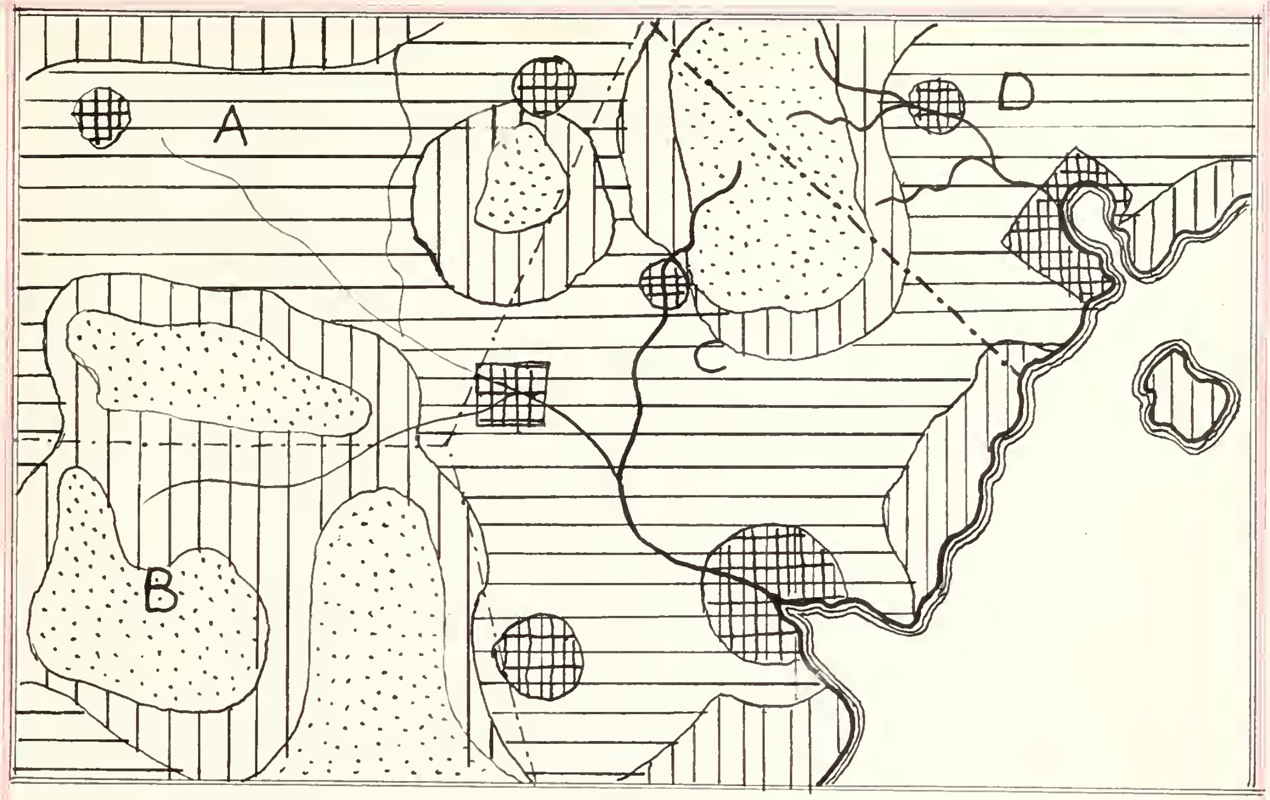
10. Which side of the Ural Mountains probably has the best farm land, east or west? ________________

16. Population

People per square mile means the average number of people who live in each area of country which is one mile square. If a region is mountainous, desert, extremely hot, extremely cold, marshy, or has barren soil unfit for crop cultivation, few people can live on it.

If the region is fertile, has a mild climate, is neither too mountainous or too low, is accessible to easy pathways of transportation, or is near the source of many natural resources, it would provide occupations to attract many people.

Centers of great density of population are usually cities. They may have been formed because they are centers of trade or located near natural resources which could provide work for many people.



Population

People per square mile

▦ 65-125

▤ 26-64

▥ 11-25

⁘ 2-10

Population

Study the map on page 61. Then answer the questions.

1. How many people per square mile live near the mouth of the river in C? ______________________________
2. Give two sensible reasons why so few people live in two sections of B. ______________________________

____

3. How can you tell that there are two towns in A?

____

4. Do you think the land in northern C is high or low? _________ Why? ______________________________

____

5. What might be the chief work of the people living near the source of the river in C? ______________
6. Why do you think so few people live along the eastern coast of D? ______________________________

____

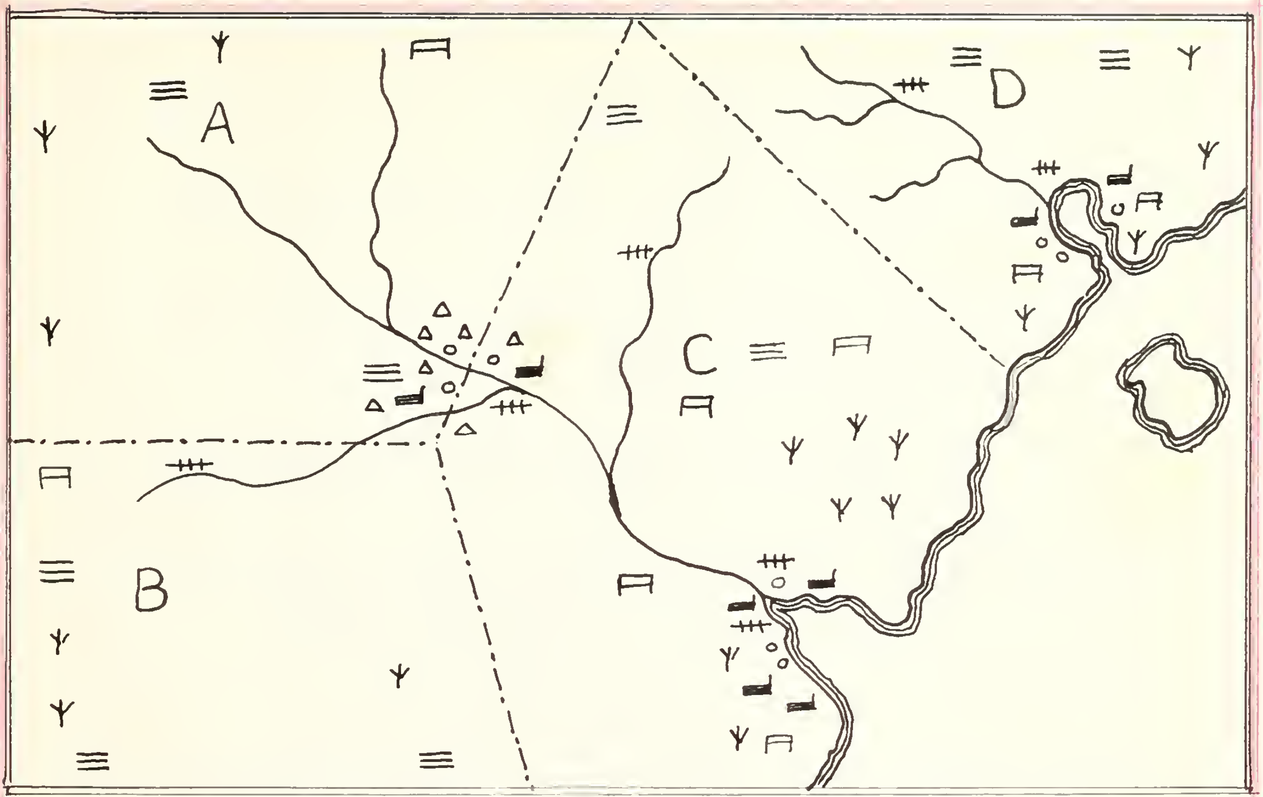
7. What might be the chief work of the people living in areas of 26 to 64 people per square mile?

____

8. Which state has the greatest population? __________
9. Which state has the fewest population? ____________
10. Why are the thickest populations found near rivers?

____

____



17. Occupations

Y Y Farmers

△ △ Miners

▬ Factory Workers

⊓ Stock Raisers

○ ○ Business Men

╫ Railroad Workers

≡ Lumbermen

. . . .

The work of a people is decided by the country in which they live. The natural resources, the climate, the land surface, the nearness of rivers and the sea, the fertility of the soil; all determine what people will do for a living.

An occupation map may tell much of the nature of the land. Let us see if you can figure out the questions and problems on page 64 by a careful study of the map.

Occupations

Use the map on page 63 to help in doing the work below.

1. Using this -+-+-+-+- as a symbol, show on the map where you would expect to find railroads.

2. Which state raises the most cattle? ______________

3. What natural resources might be found near the state boundaries of A and C? __________________

   ____

4. Draw a circle around three places where cities might be located.

5. Which is the largest farming state? ______________

6. List six types of work which business men in the state of C might do. __________________________

   ____

   ____

7. What might the factories near the boundary of C and A manufacture? ____________________________

   ____

   ____

8. In which states are the most fertile lands found?

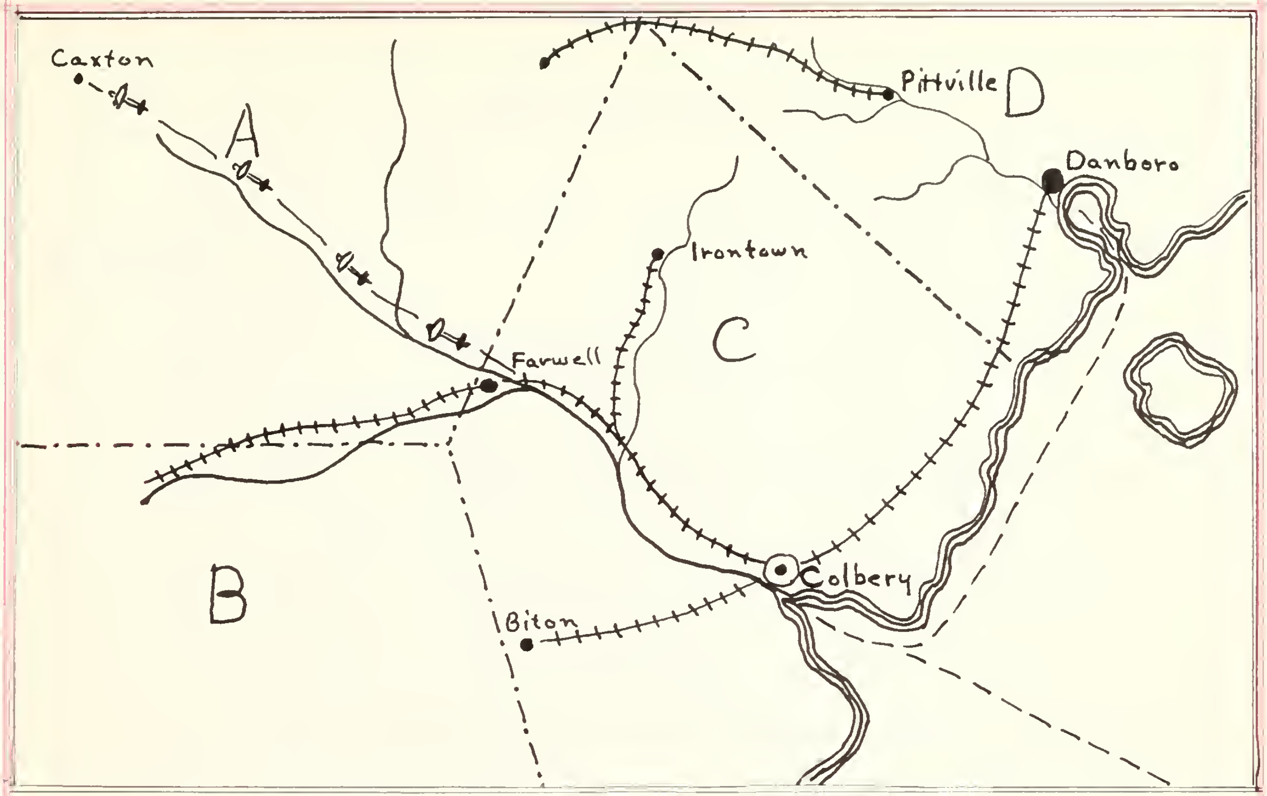
   ____

9. What might be exported from the state of D?

____

10. Would you consider the climate of southeastern C to be very hot, very cold, or temperate?

____



18. Transportation

Air — Water — Land

Railroad

. . . .

The cheapest form of transportation is by water. Next inexpensive is by truck or railroad. The most expensive form at present is travel by air.

Railroad routes generally follow level land as much as possible. Highways, rivers, and railroads often run parallel to one another as each seeks the most level path.

Air routes may choose a straight path to any point, though they must use care in mountainous regions.

18. Transportation

Read the paragraphs on page 66. Then answer the questions.

1. What is the cheapest way to travel from Colberg to Danboro? ____________________
2. What is the quickest way to travel from Colberg to Danboro? ____________________
3. Would a boat going from Colberg to Farwell be going upstream or down? ____________________
4. Give a reason why boats cannot steam up the river in A? ____________________
   ____
5. What freight might be carried from Irontown to Colberg? ____________________
6. What three methods of travel might be used between Caxton and Colberg? ____________________
   ____
7. For what two reasons do ships sail southwest from Colberg? ____________________
   ____
8. What city is a railroad center, contains an airport, and is a river port? ____________________
9. Which city is the largest railroad center? __________
10. Give a reason why a railroad was not built between Pittville and Danboro. ____________________

19. Mining

Mining is an extremely important occupation of a great number of people. After the ore is extracted from the earth it must be smelted so that the metals can be removed. Great mills are built for this purpose.

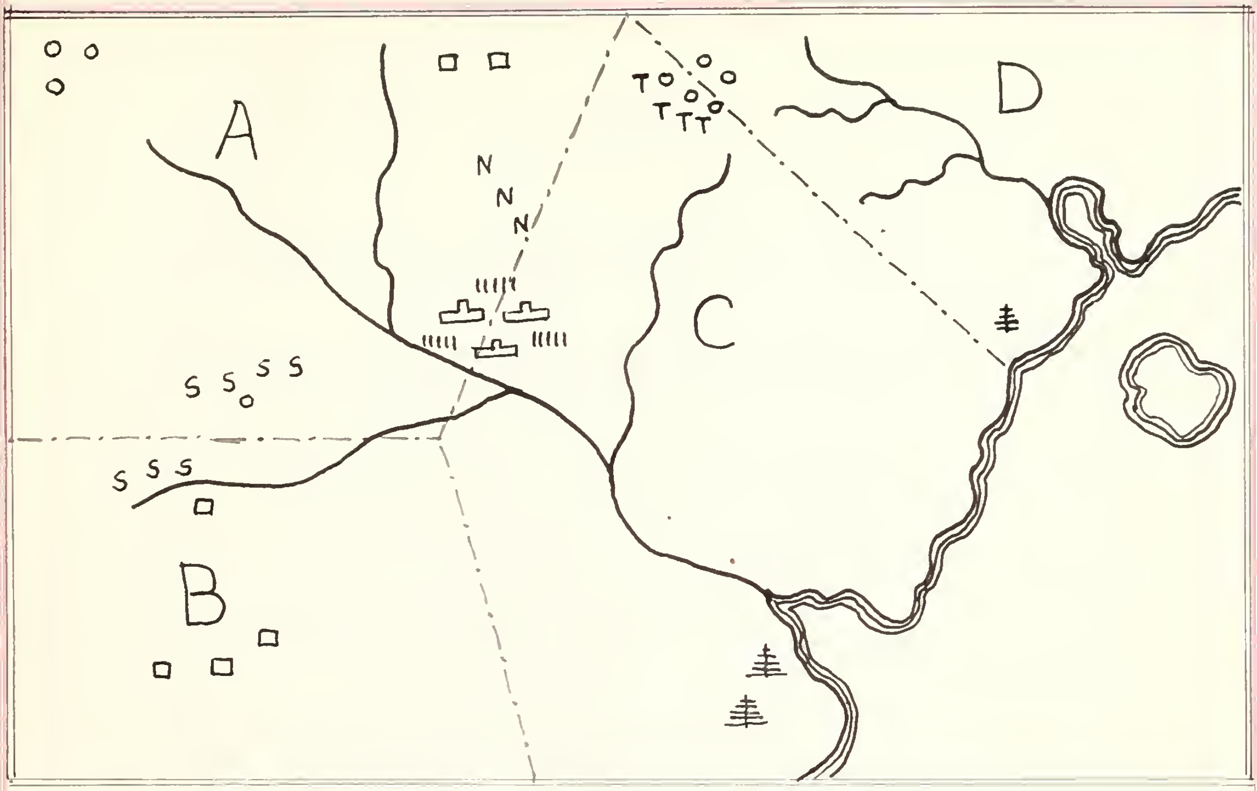
Metals like copper, tin, gold, and silver come from the earth. The work of changing the crude metal into hundreds of kinds of manufactured goods provides a living for thousands of people.

Iron is made into many articles. Much is combined with carbon to make steel.

Petroleum or oil is transformed from its crude state into many other forms in oil refineries. These forms may be kerosene, gasoline, benzine, and lubricating oil; just a few of the most important.

Coal is sometimes made into coke. Much is made into cooking gas. Many other byproducts of coal give work to thousands of workers.

Nitrates, used in a powdered form for fertilizer, is a rock obtained from mining.



Mining

○ ○ Gold

T T Tin

□ □ Copper

△ △ Silver

N N Nitrates

‡ Petroleum

|||| Iron

⊓ Coal

Mining

Work Sheet One

1. Which is the greatest mining state? ________________

2. What state has the greatest variety of mining? ____

3. Which state has the fewest mines? __________________

4. Which state mines only one mineral? ________________

5. In which states is petroleum found? ________________

6. In which states is copper found? ___________________

7. In which states is coal mined? _____________________

8. In which states is iron mined? _____________________

9. Which state has the most gold? _____________________

10. Which state has the most silver? ___________________

11. In which state is tin found? _______________________

12. In which state are nitrates found? _________________

Mining

Work Sheet Two

Study the map on page 69 for help in answering these questions.

1. Why might steel mills be located in the states of C and A? ______________________________

   ____

2. What products might be exported from C? __________

   ____

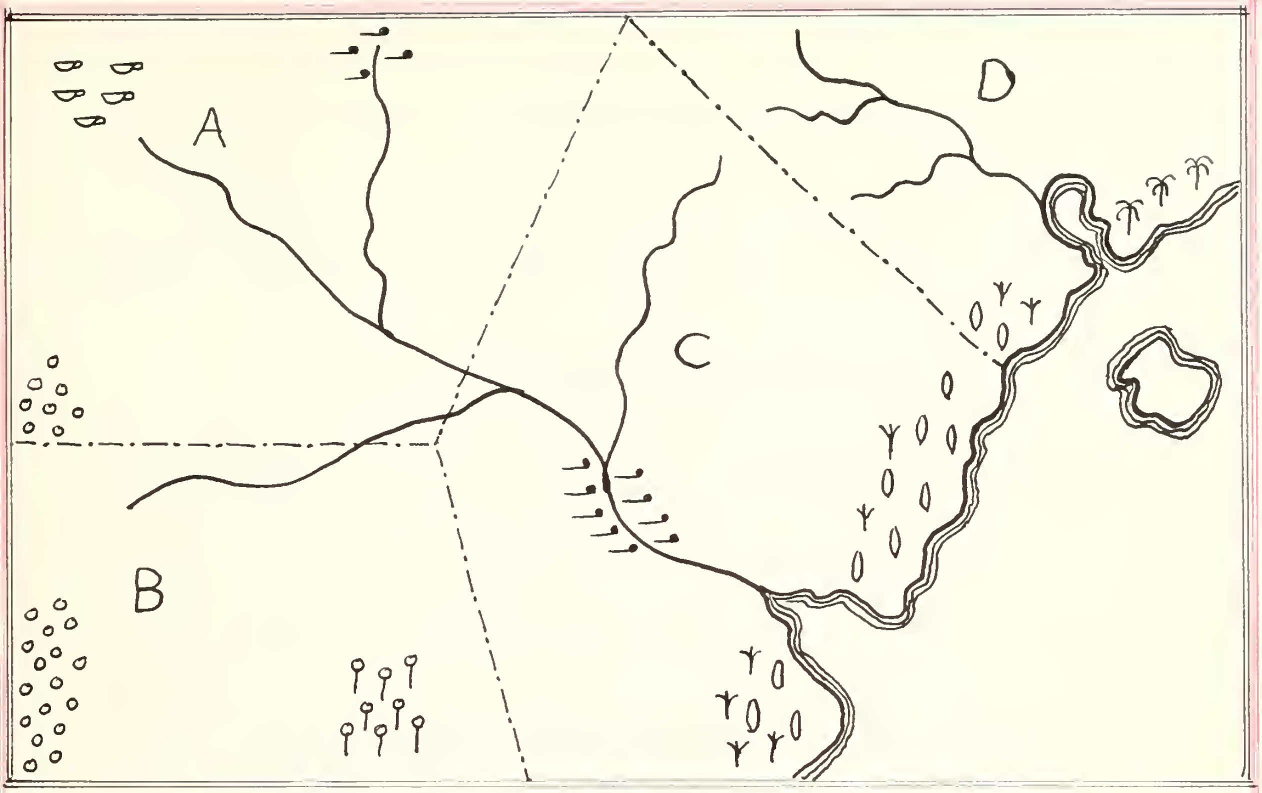
3. On the map place the letter X wherever you might think mining towns might be found.
4. Place the letter S where you think a good seaport for exporting steel products could be found.
5. Place an R where you would build an oil refinery.
6. What minerals in the state of C would be useful in a canning plant? ______________________

   Why? ______________________________

   ____

7. Show on the map how you would transport the gold in northwest A to the seacoast in C. Use map symbols.
8. Why would a farmer want nitrates? ______________

   ____



20. Vegetation

○○○○ Grapes

⬯⬯ Corn

⚲⚲⚲ Cotton

⌐ ⌐ Tobacco

◒◒ Tea

ΨΨΨ Wheat

🌴 Bananas

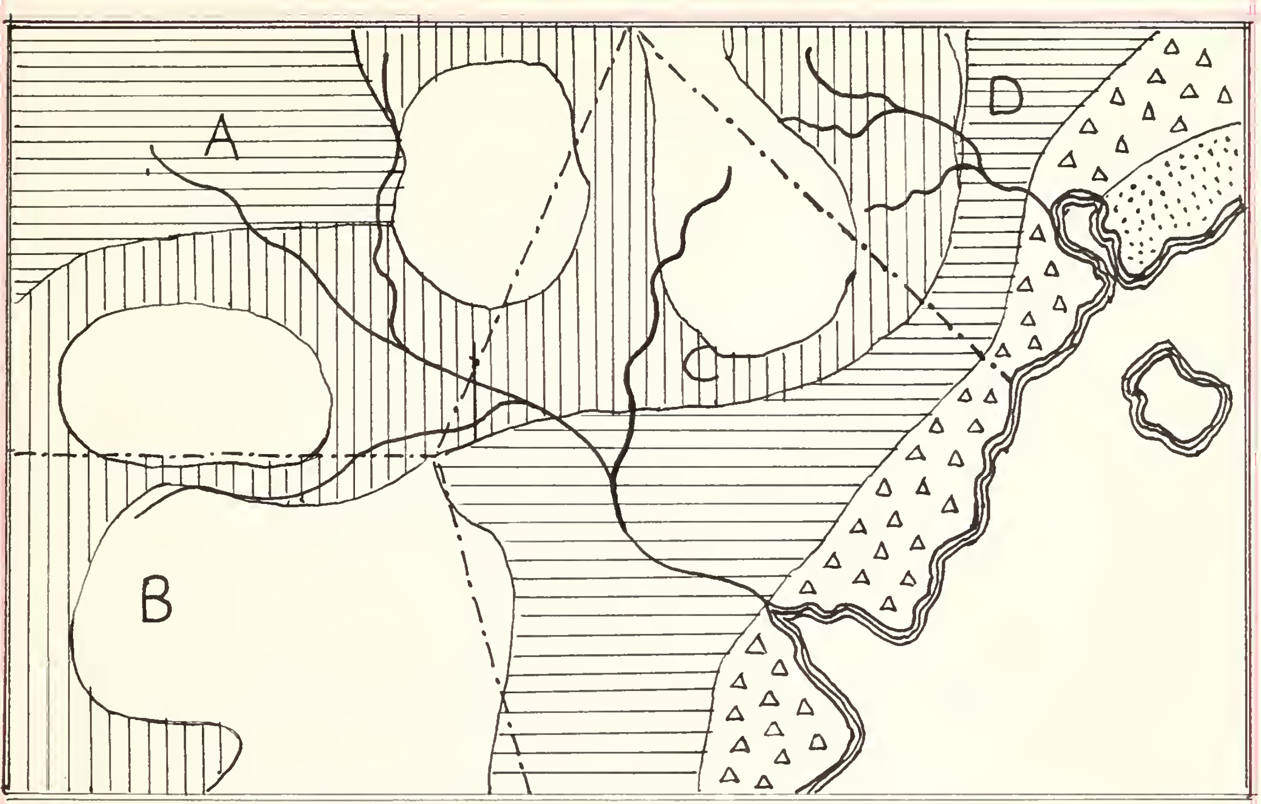
. . . .

Crops grow best at certain elevations of land in certain climates. Much can be learned about a land by studying crops and their uses. For example, bananas are a tropical fruit, growing best in hot, wet regions. Cotton grows best in a warm climate.

20. Vegetation

By using what you have learned about crops, see if you can answer the questions which follow.

1. Which states raise food crops? ____________________
2. Which states raise fruit? ____________________
3. Which states raise grain? ____________________
4. Which states raise a vegetable? ____________________
5. Which states might manufacture sheets and pillow cases? ____________________
6. Which states raise crops which might be made into beverages? (Something to drink) ____________________
7. In which states could cows and hogs be fattened for market? ____________________
8. What is the climate of eastern D? ____________________
9. What is the climate of east-central B? ____________________
10. What states probably manufacture cigars and cigarettes? ____________________



21. Lumbering

▥ Fir - Spruce - Cedar

▤ Maple - Oak - Poplar

⁘ Mahogany

△△△ Hard Pine

. . . .

Different types of trees grow best in different climates and at different elevations or heights of land. Evergreen trees usually grow best in temperate to cool climates, in upland or mountainous regions.

Maples, oaks, and poplars thrive in temperate climates.

Pines like the long leaf, hard pine grow in temperate to warm climates, often in lowland areas.

Mahogany grows best in hot, tropical climates.

Lumbering

Study page 74 carefully. It will help you to do the following work correctly.

1. Check the states in which evergreens grow.

   D B A C

2. Check the states in which hard pine grows.

   A D B C

3. Check the state in which mahogany grows.

   C B A D

4. Check the two best reasons why trees grow very little in the unmarked areas.

   a. It is water.

   b. It is very high, above the tree line.

   c. It is all desert land.

   d. There isn't enough rain for trees to grow.

5. The weather near the seacoast in eastern D is very

   ________________ .

6. Check the region where evergreens grow best.

   a. desert

   b. upland or mountains

   c. very low land

   d. very hot, rainy land

7. Hard pine is used for floors in houses. Check the states which export much lumber for this use.

A D C B

8. Check the state which might export a very valuable lumber used for making fine living room, bedroom, and dining room furniture.

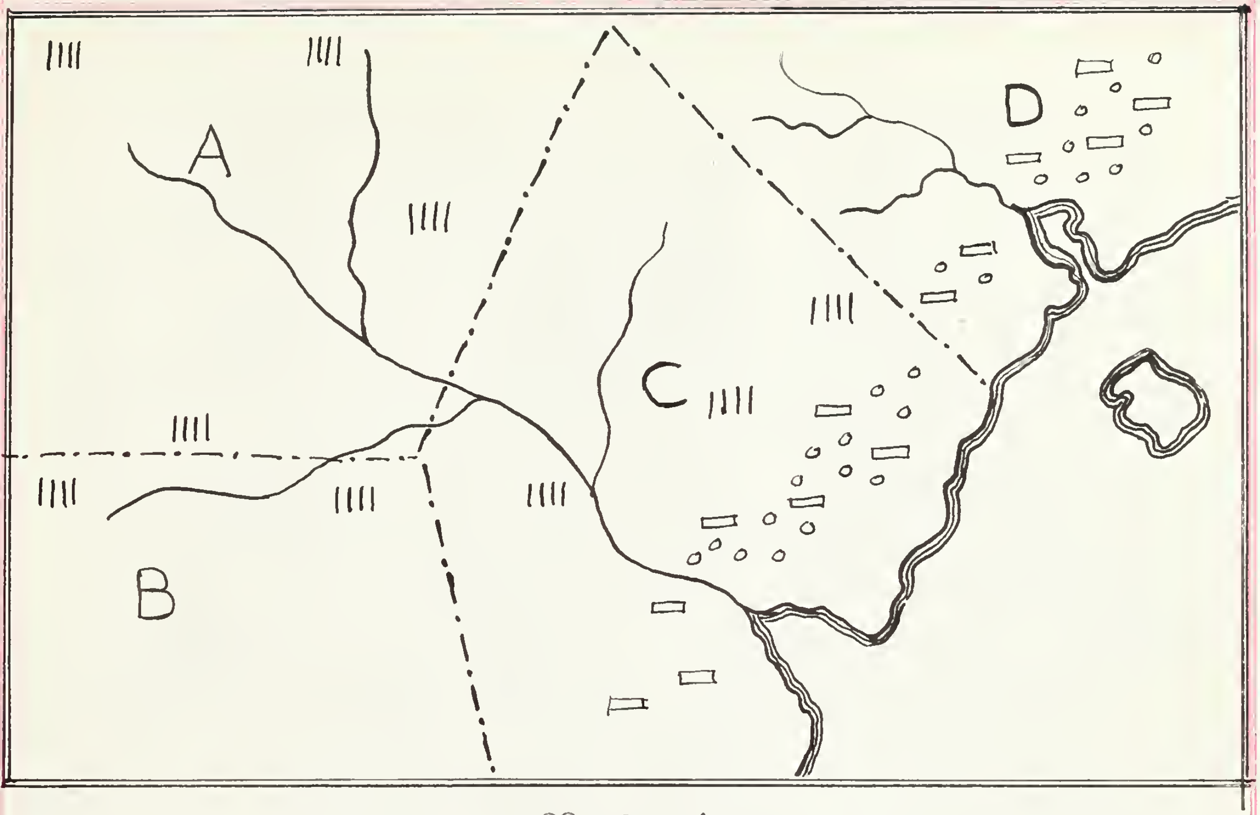
B D A C

9. The climate where maples, oaks, and poplars grow best is

a. hot, moist
b. frigid
c. temperate
d. hot, dry

10. Check the chief cargo of ships sailing down the river from B to the sea.

a. mahogany
b. oak
c. spruce
d. hard pine



22. Grazing

○ ○ ○ Pigs	▭ Cattle	| | | | Sheep
Each o = 1000 pigs	Each ▭ = 1000 head of cattle	Each | = 500 sheep

. . . .

Animals live and thrive where their food is most plentiful. Though most domestic animals can live comfortably in almost every climate except the very cold and very hot, men usually raise them in large quantities in regions which are best suited for their growth.

By thinking about where these animals live best and what they eat, one can learn much about weather and crops in any land, even though these are not shown on a map of that land showing grazing areas alone.

Grazing

Work Sheet One

Read the material on page 77 as an aid in answering these questions.

1. What states raise cattle? ____________________
2. What states raise hogs? ____________________
3. What states raise sheep? ____________________
4. What states raise much corn? ________________
5. What states export wool? ____________________
6. What states might have large meat packing plants? __
7. What states might export beef and cowhides? ______
8. What states have the most temperate climate? _____
9. What states must import pork and bacon? _________
10. In what states might high mountains be found? ____

Grazing

Work Sheet Two

Sometimes on maps, symbols standing for animals, vegetation, mining, etc., may represent a certain number of animals, a certain acreage of plants, a certain tonnage of metals. If that is designated on a map the amounts and value of products can be figured quite accurately.

Figure out the following problems by looking at the map symbols very carefully.

1. How many sheep are raised in A?____________________
2. Which state raises the most sheep? ________________
3. Which is the greatest grazing state? ______________
4. Which state raises the most pigs? _________________
5. Which state raises the most cattle? _______________
6. Which state raises cattle, hogs, and sheep? _______
7. How many hogs are raised in the state of D? _______
8. How many cattle are raised in C? __________________
9. How many cattle are raised in C and D? ____________
10. How many more sheep are raised in A than in B? ____

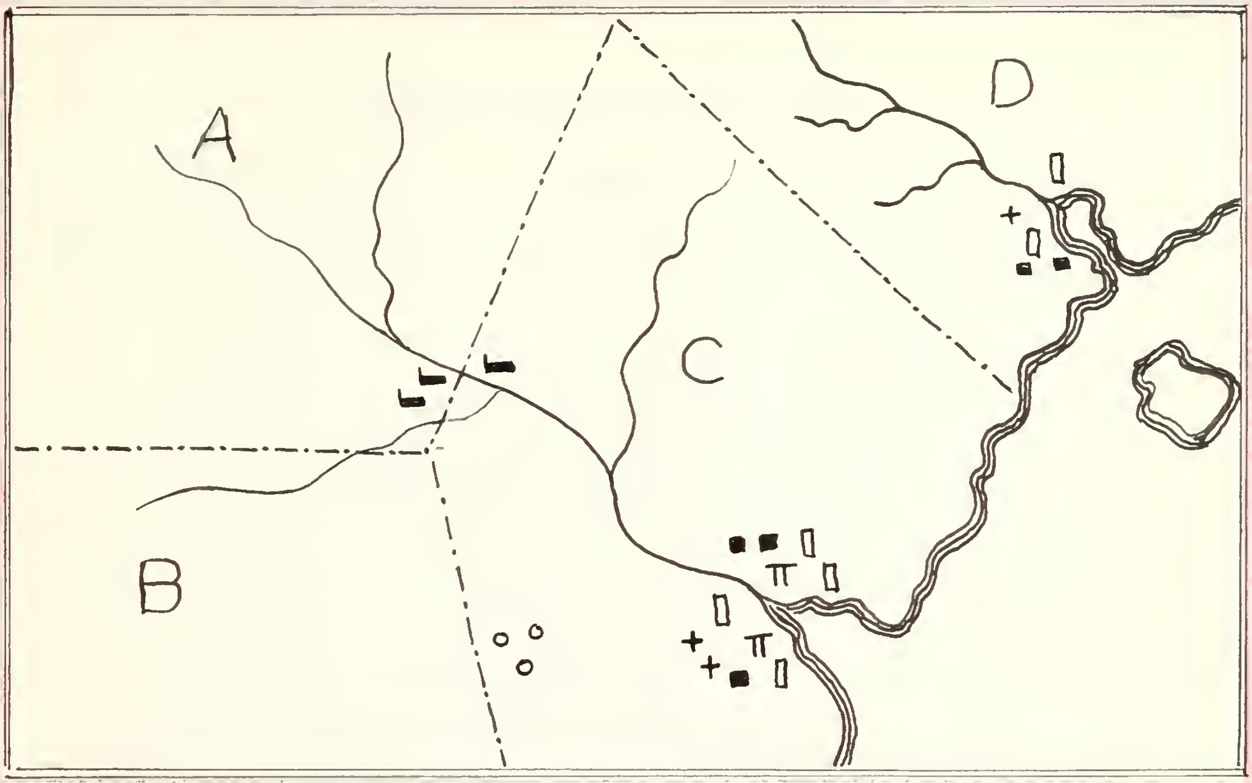
23. Manufacturing and Industry

Manufacturing and industrial plants are usually placed carefully with several factors in mind. A factory needs power and it is an advantage to have a source of power near by. This power may be from oil, coal, water, or electricity. Electricity is generated by water power or by fuels such as coal and oil. The nearer to power, the cheaper the fuel cost.

Factories need to be placed where transportation is near and inexpensive. Water transportation is cheaper than road or rail. This explains why many manufacturing cities are situated on the banks of navigable rivers or near good harbors.

It is desirable to place industrial plants near the source of raw materials if this is possible. This reduces the cost of obtaining raw materials.

The climate must be considered. Factories must be placed in areas where people can live comfortably and where they can obtain food and other necessities.



Manufacturing and Industry

▄	Steel Mills	π π	Furniture Making
▯ ▯	Canning Plants	+ +	Oil Refineries
■ ■	Meat Packing	o ° o	Textile Mills

Manufacturing and Industry

Read the section on Page 80 very carefully. It will help you in answering the questions on the map on page 81.

1. In what states is iron mined? ____________________
2. In what states is oil found? ____________________
3. What states raise cattle and hogs? ______________
4. Which state has no manufacturing? ______________
5. What crop might be raised in the state of B which is manufactured into sheets in western C? _________
6. What three kinds of trees might be found in the state of C which are shipped to the factories which make furniture? ______________________

8. Why might you think corn, beans, peas, and tomatoes are raised in D and C? ______________________

9. How would the products of the textile mills in C probably reach the sea? ______________________
10. How would the products of the steel mills in C and A reach the sea? ____________________________
11. The steel mills are located in a hilly region. What power do you think they use? ______________
12. What might be shipped from the seaport in C which would furnish power for the textile mills? _____

    ____

24. Exports and Imports

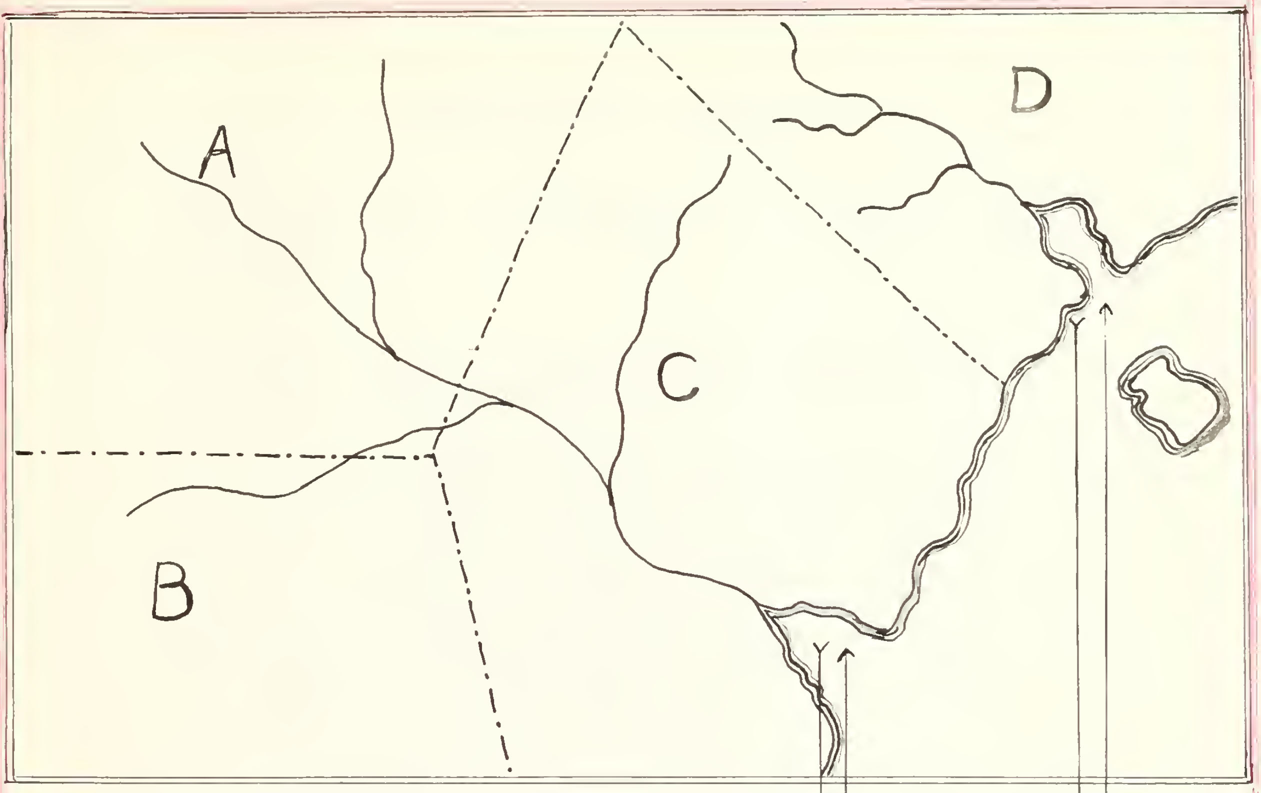
Imports are products brought into a country from outside. They usually consist of things which cannot be produced inside the country, or which can be manufactured cheaper outside. Such foods and other articles are needed for the comfort and convenience of people living in the country.

Exports are goods shipped out of the country. These are goods and articles needed in other lands which are not grown or manufactured there.

This trading back and forth between people and countries is called trade or commerce.

The natural resources of a country can be determined to some extent by a study of its exports.

A study of imports can help in learning of the work of the people in any regions.



Exports and Imports

Wine
Tea
Tobacco
Cotton
Lumber
Gasoline
Canned Goods
Crude Steel

Petroleum
Mahogany
Meat Products
Nitrates
Bananas

Machinery
Vegetables
Magnesium
Woolen Goods
Rubber
Farm Machinery

Vegetables
Farm Machinery
Manufactured
Goods of all kinds

Exports and Imports

The map on page 84 will help you in answering the following questions.

1. What subsoil (under ground) products are found?

   ____

2. What is grown which proves that part of the state of D has a tropical climate? ______________

3. What is mined from which steel is made? __________

4. How do you know that cattle are raised? __________

   ____

5. What is exported which shows that machinery is needed for factories? ____________________

6. How do you know there are few sheep raised? ______

   ____

7. Farm machinery would be used on what type of farms?

   ____

8. How do you know that there are very few industrial and manufacturing centers? ________________

   ____

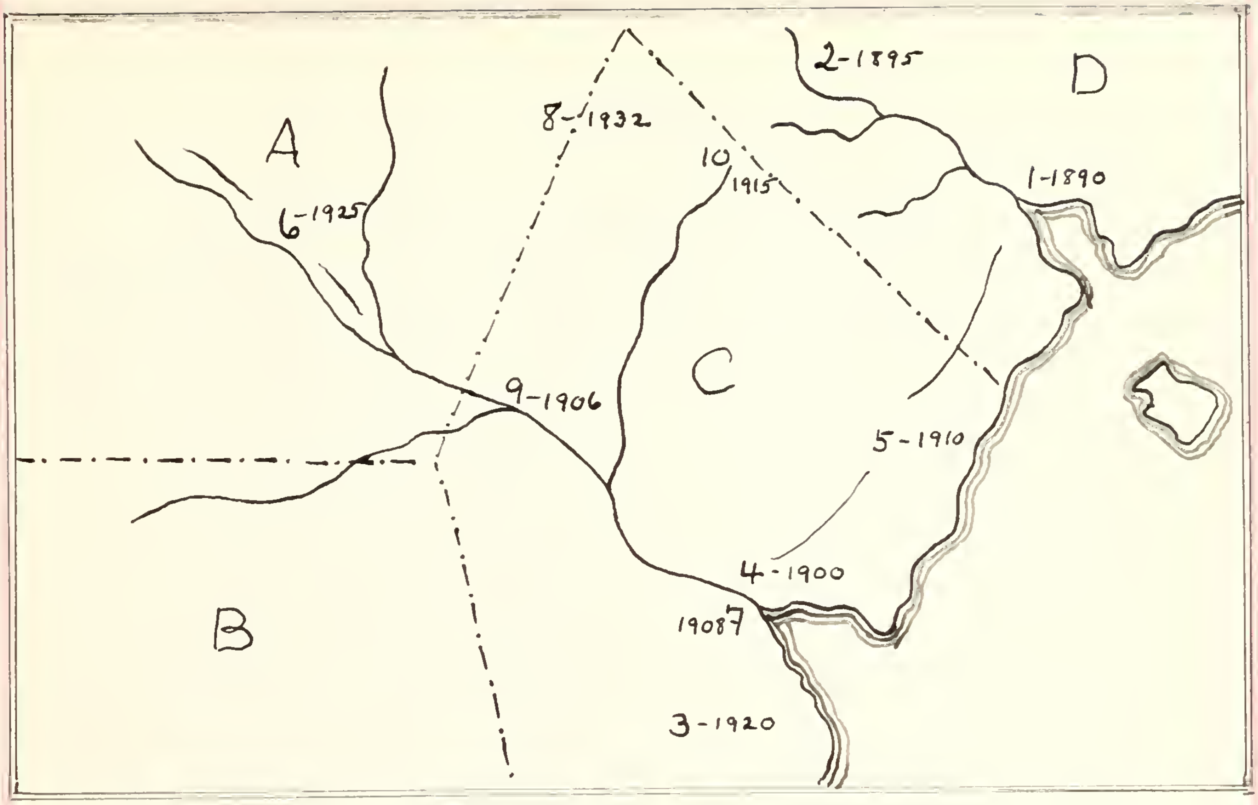
9. What is grown from which wine is made? __________

10. Give six uses for which rubber might be imported.

    ____

    ____

    ____



25. History

1. First Settlement
2. Discovery of Gold
3. Discovery of Oil
4. Second Settlement
5. Completion of First Railroad
6. First Air Route
7. Establishment of Capital
8. Nitrates discovered
9. First Steel Mills
10. Mt. White first ascended

. . . .

The order in which events happen in the history of any section of the world can be recorded on maps. A careful study of such happenings as shown by the map can clarify the sequence in the mind of the reader easier than just by a study of the written material.

History

1. Place opposite the letters the numbers and dates which show the order in which the various events shown on the map on page 86 happened. List the event which happened first, beside the letter A.

	Number	Date		Number	Date
A	_______	______	F	_______	______
B	_______	______	G	_______	______
C	_______	______	H	_______	______
D	_______	______	I	_______	______
E	_______	______	J	_______	______

2. There were ________ years between the first and second settlements.

3. The air route was established ______ years after the first railroad.

4. Place the discoveries of oil, gold, and nitrates in their proper order, with the first discovery first. ______________, ______________, ______________.

5. When was the first organized government planned?

   ____

6. How long ago was Mt. White first ascended? _________

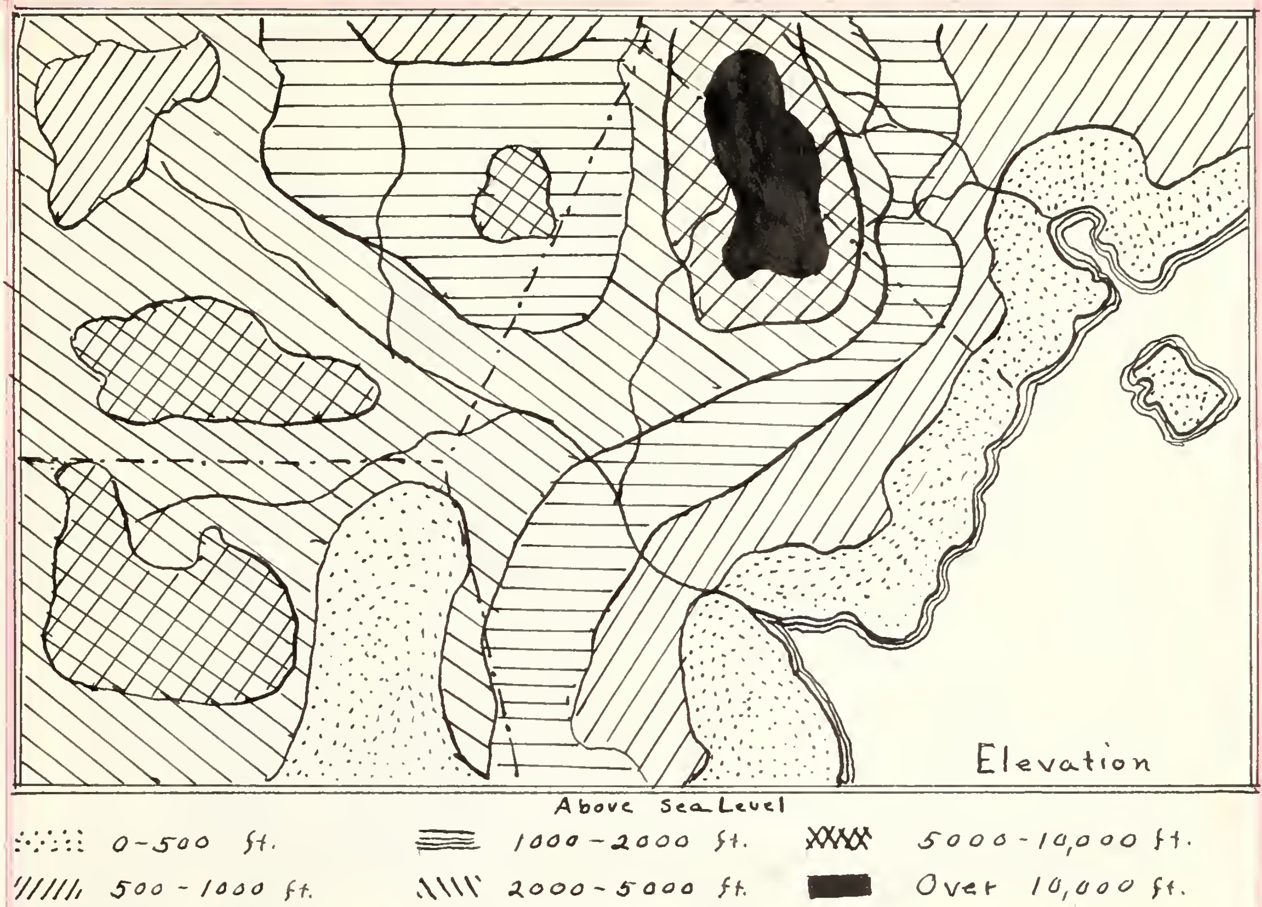
7. How long after the first settlement were steel mills built? ______________________________________

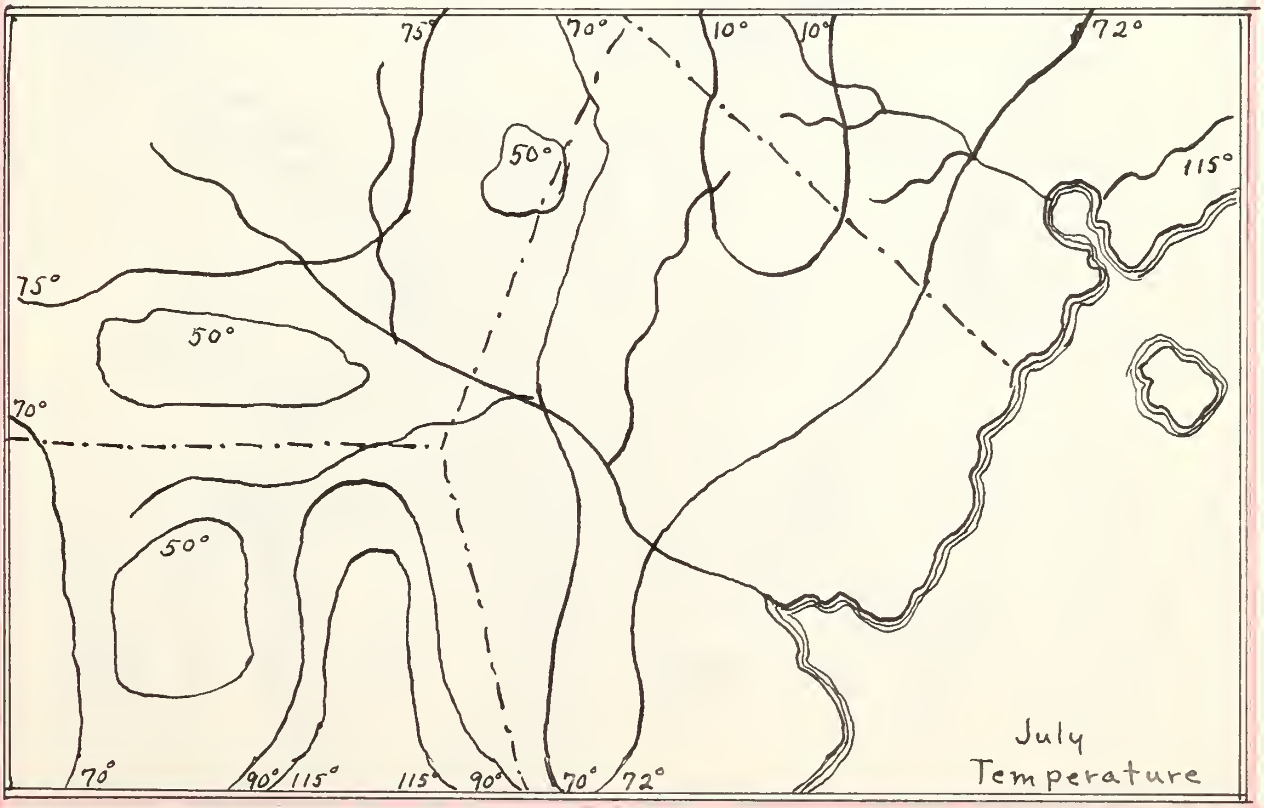
8. How long after the discovery of gold was oil discovered? ____

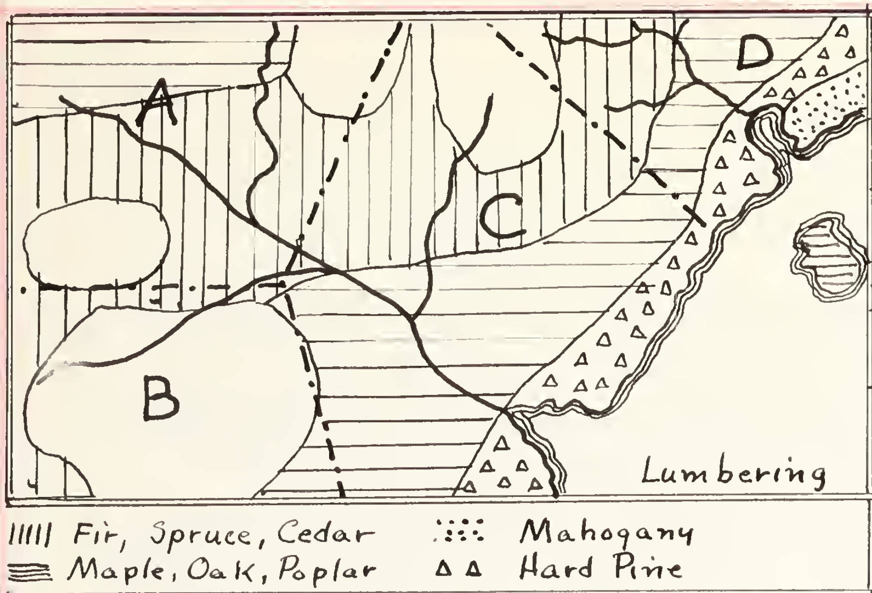
26. Two Pattern Maps

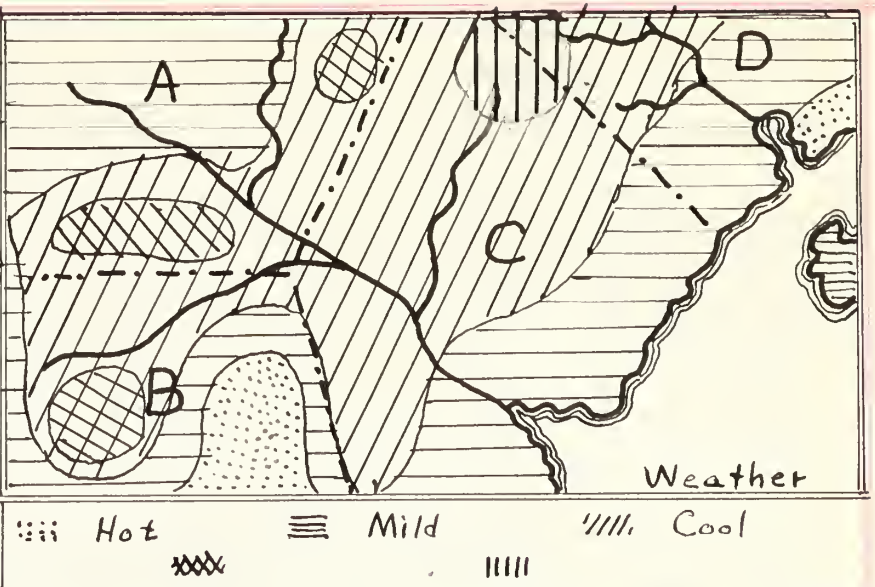
Study the two maps on page 89. Using what you have learned about temperature and elevation answer the statements below. Write a T beside every true statement. Write an F beside any false statement.

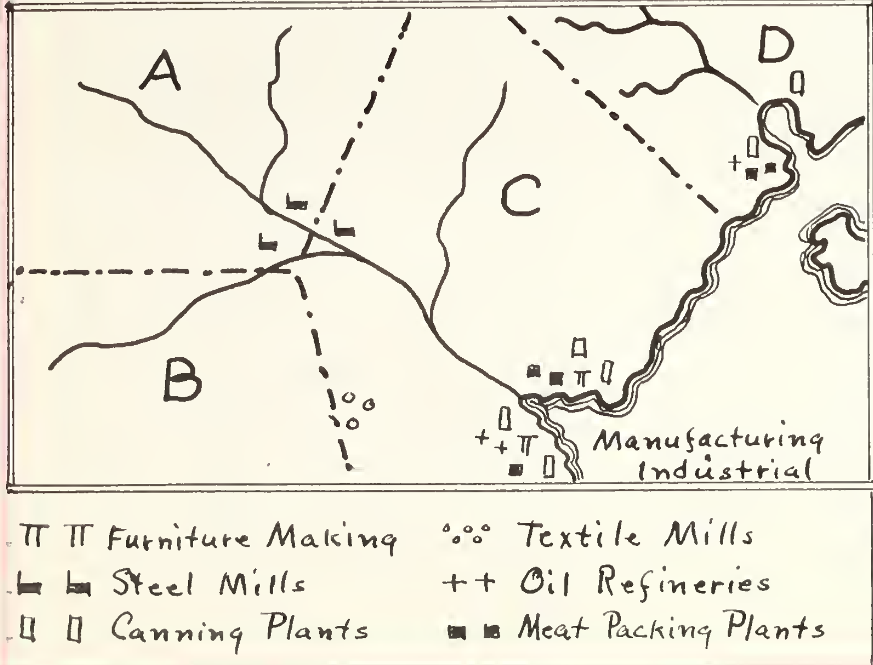
1. Winds from western B cannot carry their moisture over the mountains in west central B. ______
2. The eastern section of B is desert land. ______
3. The mountains in northern C never have snow on their tops. ______
4. People would find the climate along the seacoast of C comfortable in the summer. ______
5. Mountains in southern A do not affect the temperature of that region. ______
6. Central and eastern C have no farms because of the extremely cold climate. ______
7. Eastern B has a very heavy rainfall per year.______
8. People cannot live on the mountain tops of C because of the cold climate. ______
9. Winds bring rain from the sea toward the northeast coast of D. The temperature there shows this to be a jungle region. ______
10. Fruit and vegetables can be grown in northwestern A. ______

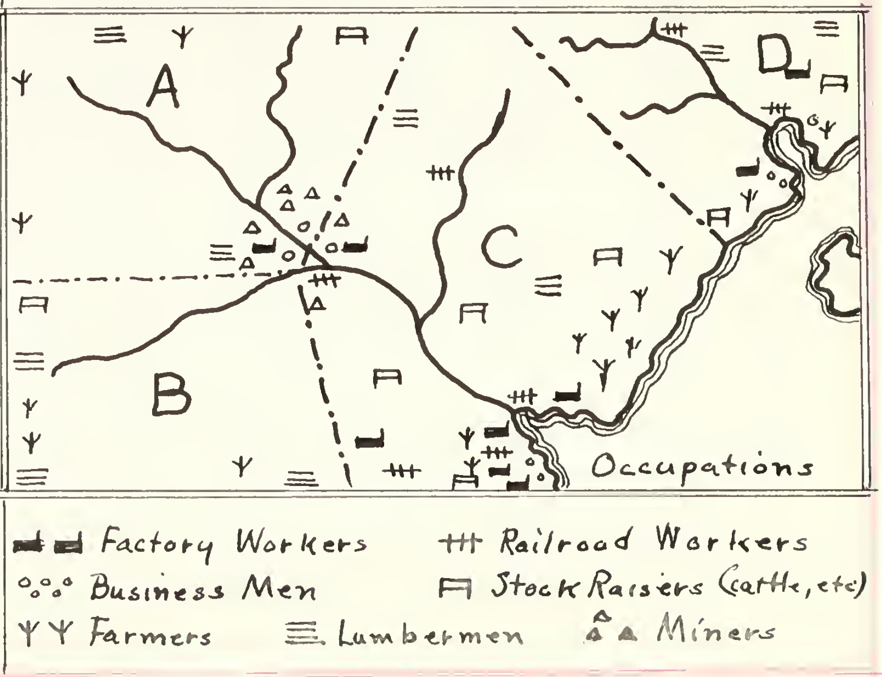

Elevation
Above Sea Level
0-500 ft.
500-1000 ft.
1000-2000 ft.
2000-5000 ft.
5000-10,000 ft.
Over 10,000 ft.


75°
70°
10°
10°
72°
50°
115°
75°
50°
70°
50°
70°
90°
115°
115°
90°
70°
72°
July
Temperature


A
B
C
D
Lumbering
Fir, Spruce, Cedar
Maple, Oak, Poplar
Mahogany
Hard Pine


A
B
C
D
Weather
Hot
Mild
Cool


A
B
C
D
Manufacturing
Industrial
Furniture Making
Steel Mills
Canning Plants
Textile Mills
Oil Refineries
Meat Packing Plants


A
B
C
D
Occupations
Factory Workers
Business Men
Farmers
Lumbermen
Railroad Workers
Stock Raisers (cattle, etc)
Miners

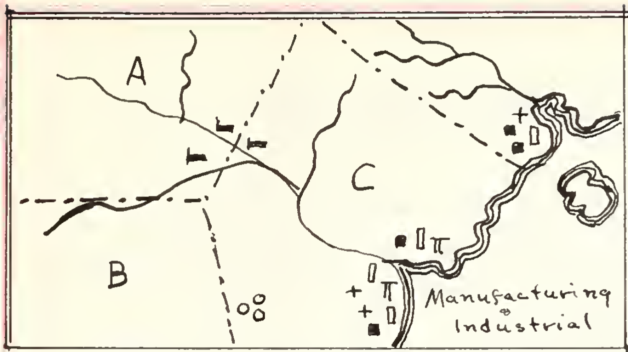
27. Map Interpretation - Four Pattern Maps

Study any or all of the maps on page 90 for the answers to the following problems.

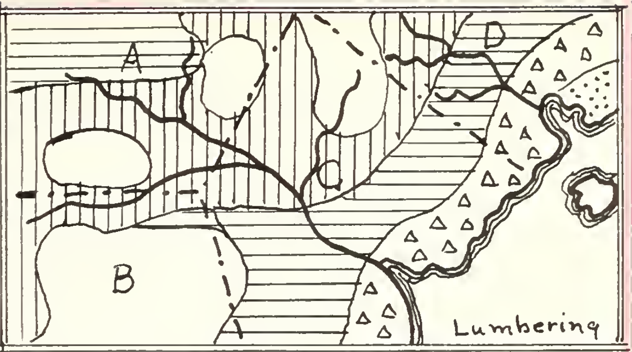
1. Check the phrase which best explains why canning plants are found in C and D.
    - a. Tin can be obtained for cans.
    - b. Many factory workers live there.
    - c. The mild weather makes large vegetable farms possible.
2. Check the two best reasons why there are furniture factories in the states of C and D.
    - a. The weather is mild so people like to live there.
    - b. Lumber for furniture is easily obtained.
    - c. Railroads can bring raw material in from other states.
    - d. Cheap fuel for running the plants is at hand.
3. Select the two best reasons why many workers live near the border of A and C.
    - a. The region is rich in iron ore.
    - b. There are great forests near by.
    - c. Steel mills convert the iron into steel.
    - d. It is near a river junction.
    - e. The weather is cool, therefore suitable for workers.

4. Give the best reason why no forests are found in the section near the eastern border of A and the western border of D.
   a. It is a desert.
   b. It is a treeless plateau.
   c. It is a region of high mountains which extend well above the tree line.
5. Check the two best reasons why the farmers in A and B do not sell food to the city markets.
   a. There are few cities near by.
   b. It is too hot to ship out food.
   c. Lumbermen eat all the food the farmers can raise.
   d. There are no railroads near by.
6. Check a good reason why meat packing plants are found in C and D.
   a. They are near exporting cities.
   b. Many cattle are raised in these states.
   c. Hard pine is used for tanning hides.
7. Check a good reason why eastern B seems unproductive.
   a. It has too much rain.
   b. It is a desert.
   c. It is a barren mountainous region.

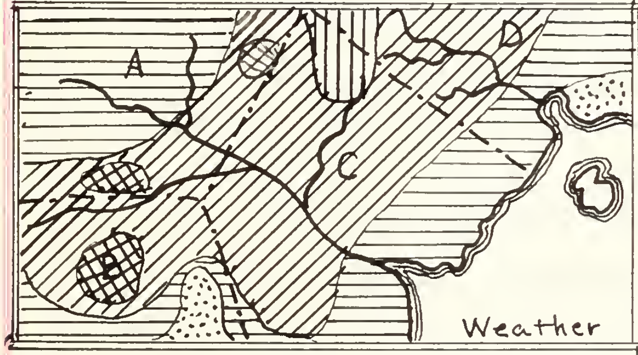
8. Mahogany is raised in southeastern D. Give the best reason for its growth here.
   - a. It is near the seacoast.
   - b. It has a wet, hot climate.
   - c. It has a dry, hot climate.
9. A large paper mill is situated near the mouth of the river in C. What sentence best explains why it is located here?
   - a. Much paper is sold to the canning plants for labels.
   - b. Railroads carry bales of paper.
   - c. Poplar wood pulp is used for making paper and is plentiful in this region.
10. Check the best reason why a city at the mouth of the river in C is a great railroad center.
    - a. Railroads from all the states carry goods there for export to other lands.
    - b. Many tourists travel through there.
    - c. The land is low and level so it is easier for men to build railroads to that point.



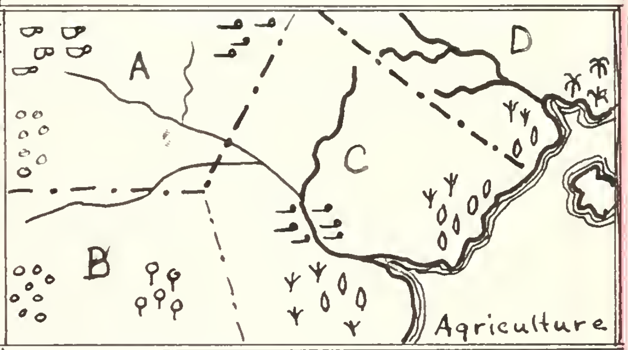
π π Furniture Making
° ° ° Textile Mills
▬ ▬ Steel Mills
+ + + Oil Refineries
▯ ▯ Canning Plants
■ ■ Meat Packing



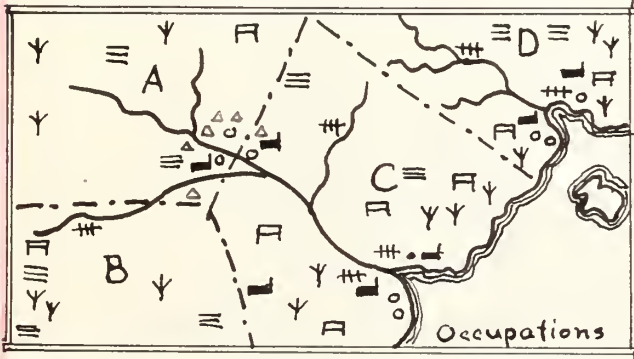
||||| Fir, Spruce, Cedar
∴∴ Mahogany
☰ Maple, Oak, Poplar
△ △ △ Hard Pine



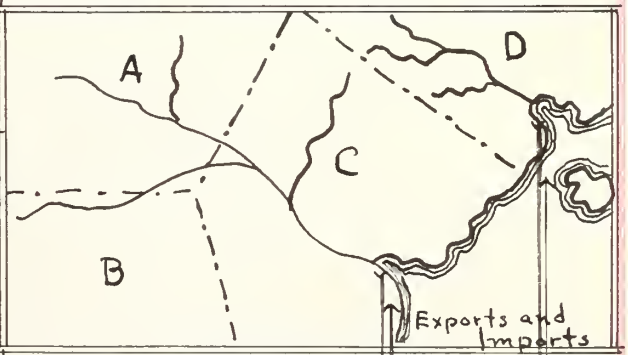
∴∴ Hot
☰ Mild
//// Cool
▦ Cold
|||||| Very Cold



° ° ° Grapes
0 0 Corn
Y Y Wheat
⚭ ⚭ Tea
♀ ♀ Cotton
→ Tobacco
✻ ✻ Bananas



▬ ▬ Factory Workers
+++ Railroad Workers
° ° ° Business Men
Ħ Ħ Stock Raisers
Y Y Farmers
☰ Lumbermen
△ △ △ Miners



Exports		Imports	
Wine	Tea	Machinery	Vegetables
Tobacco	Mahogany	Magnesium	
Cotton	Meat Products	Rubber	
Lumber		Woolen Goods	
Gasoline		Farm Machinery	
Canned Goods		Manufactured Goods of all Kinds	
Crude Steel			

28. Map Interpretation - Six Pattern Maps

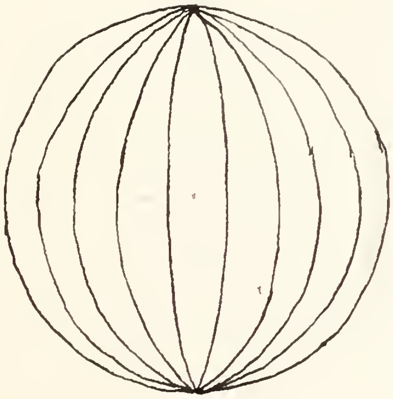
Study the maps on page 94 carefully when answering these questions. Cross out the wrong answer in parentheses.

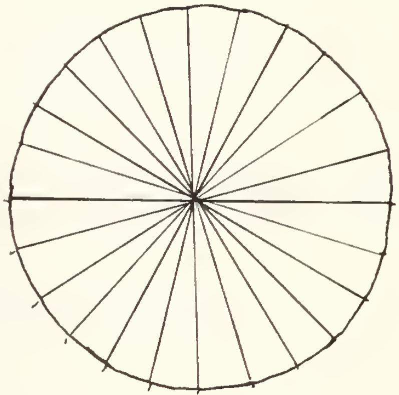
1. The growth of mahogany requires a (hot, cool) climate.
2. The mills in southwestern C manufacture (furniture, cotton textiles).
3. The grapes in A and B are exported as (raisins, wine).
4. The forests in A and B provide much work for (lumbermen, furniture makers).
5. Farmers in C obtain their machinery from the (factories in eastern A, from other countries).
6. Most of the farms in C and D are located near the coast because the weather there is (cool, mild).
7. Bananas grow best in a (mild, hot) climate.
8. Oil is (exported from, imported into) C.
9. Furniture made from maple and oak can be made from lumber (grown in, imported into) C.
10. The iron mined in A and C is manufactured into (railroad rails, crude steel).

29. Parallels and Meridians

The earth is a sphere or ball, turning on an axis, the ends of which are the north and south poles.

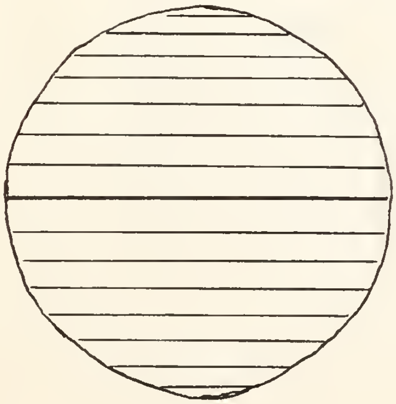
Meridians or lines of longitude are imaginary lines running north and south from pole to pole. They meet at the poles but spread out as they near the equator.

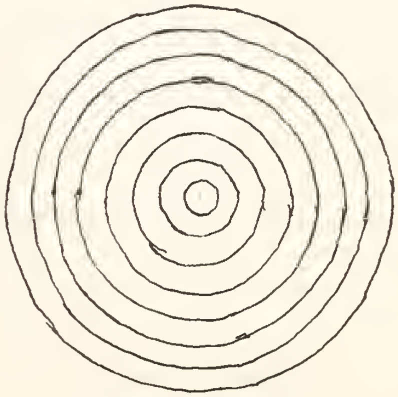




Looking from Pole
toward equator

Parallels or lines of latitude are imaginary lines running around the world in an east-west direction parallel to the equator.





Looking from pole
toward equator

Meridians always point to north and south, parallels to east and west.

These lines on maps are used as an aid to map makers and to help in locating places and directions.

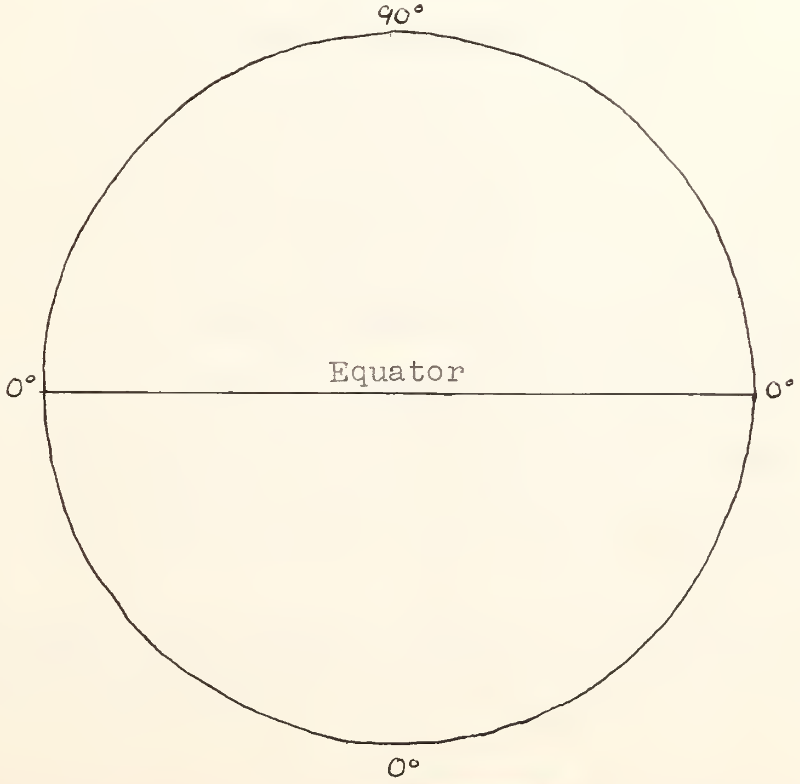
Answer the following questions by filling in the blanks with the proper words.

1. The earth is a ball or ______________.
2. An imaginary line through the center of the earth around which it turns or revolves is an _______.
3. Lines of ________________ run north and south around the earth.
4. Lines of latitude run around the earth in an _________________________________direction.
5. _________________ lines meet at the ______________. but spread out as they cross the equator.
6. Lines of longitude are called ____________________.
7. Lines of latitude are called _____________________.
8. Lines on maps aid in locating ____________________.
9. Lines of _________________ are equal in length.
10. Lines of _________________ are unequal in length as they are farther away from the equator.

30 Degrees

Measurements of length are given in inches, feet, yards, etc. Measurements of weight are given in ounces, pounds, and tons. Measurements of time are seconds, minutes, hours, etc. Measurements of circles are given as degrees. A whole circle is 360°. A small ° stands for a degree. One degree is 1/360 of a circle.

In going from the North Pole around the globe in a straight line, crossing the equator twice and passing over the South Pole a person would travel 360°. A degree is just 69.4 miles at the equator, so we call it 70 miles. This unit can be used for measuring distances by means of parallels and meridians.



Degrees

Fill in the blanks.

1. The unit of measurement for a circle is the ______.

2. The symbol for a degree is _____.

3. A circle is divided into _________ degrees.

4. A degree at the equator is about _____ in length.

5. From the equator to the North Pole is _____degrees.

6. From the North Pole to the South Pole is ___degrees.

7. Around the earth at the equator is _______ degrees.

31. Latitude - Longitude - Degrees

Meridians are numbered from 0° where the meridian passes through the city of Greenwich, England, (called the Prime Meridian) to 180°, half way around the world, both east and west. They are usually numbered every 15° but may be numbered every 5° or 10° as the map makers desire. 10° west of the Prime Meridian or 0° would be called 10° West Longitude. 30° east of the Prime Meridian or 0° would be called 30° East Longitude.

Parallels are numbered from 0° at the equator to 90° at the poles. The distance from the equator to either pole is

90° or one-quarter around the globe, or one-fourth of a circle of 360°. They are usually numbered each 10°. 30° north of the equator would be read 30° North Latitude. 65° south of the equator would be read 65° South Latitude.

Fill in the blanks.

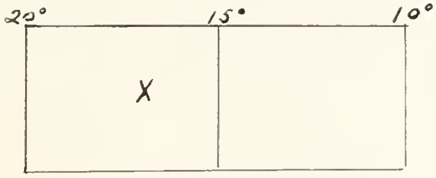
1. The Prime Meridian or 0° meridian passes through ______________________________
2. Meridians are numbered east and west from ________
3. They reach to ______ $^{\circ}$, half way around the world.
4. The meridian lines are usually _____ $^{\circ}$ apart.
5. Parallels are numbered from ____ $^{\circ}$ at the equator to _____ $^{\circ}$ at the poles.

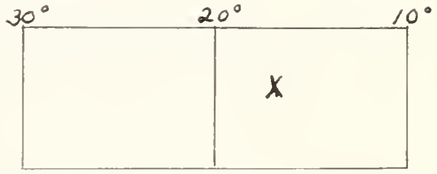
To locate a place by latitude and longitude lines find the nearest parallel and meridian lines on the map. Follow them to the margins of the map and determine whether they are east or west of the 0° (Prime Meridian), and north or south of the equator. Sometimes when the place is not right on a line judgment has to be used to figure the degrees between the numbered lines.

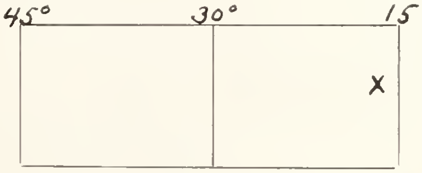
When latitude and longitude is given and a place is to be found, look for the corresponding numbers at the side of the map for latitude and at the top or bottom of the map for

longitude and follow the two lines until they cross each other. If numbers are given which are not marked on the map simple figuring will show where the imaginary line should be.

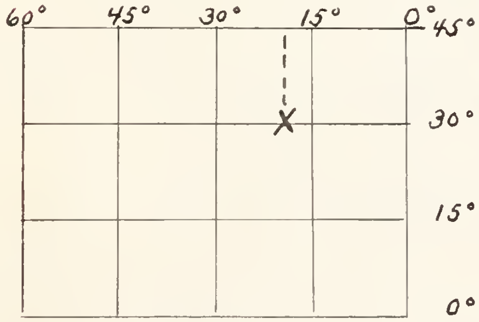
Example: 17° West Longitude (W. Long.) would be almost halfway between 15° and 20° if the meridians are numbered every 5°; or a little over halfway between 10° and 20° if they are numbered every 10°, or just beyond the 15° mark if they are numbered every 15°.

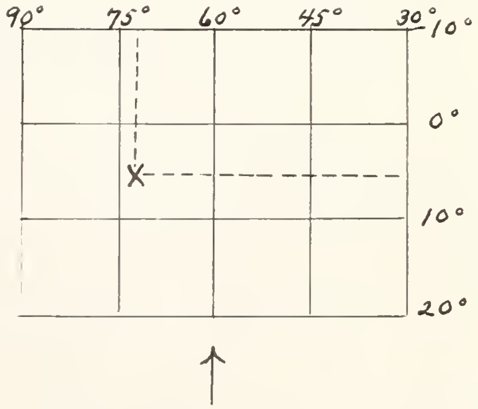






Example: Locate a spot which is 20° W. Long., 30° N. Lat.(Latitude).





Example: Give the position by longitude and latitude of the X on the map. Answer; 70° W. Long., 5° S. Lat.

32. Zones

Zones are temperature belts into which the earth has been divided. These are shown on maps by lines called zone lines.

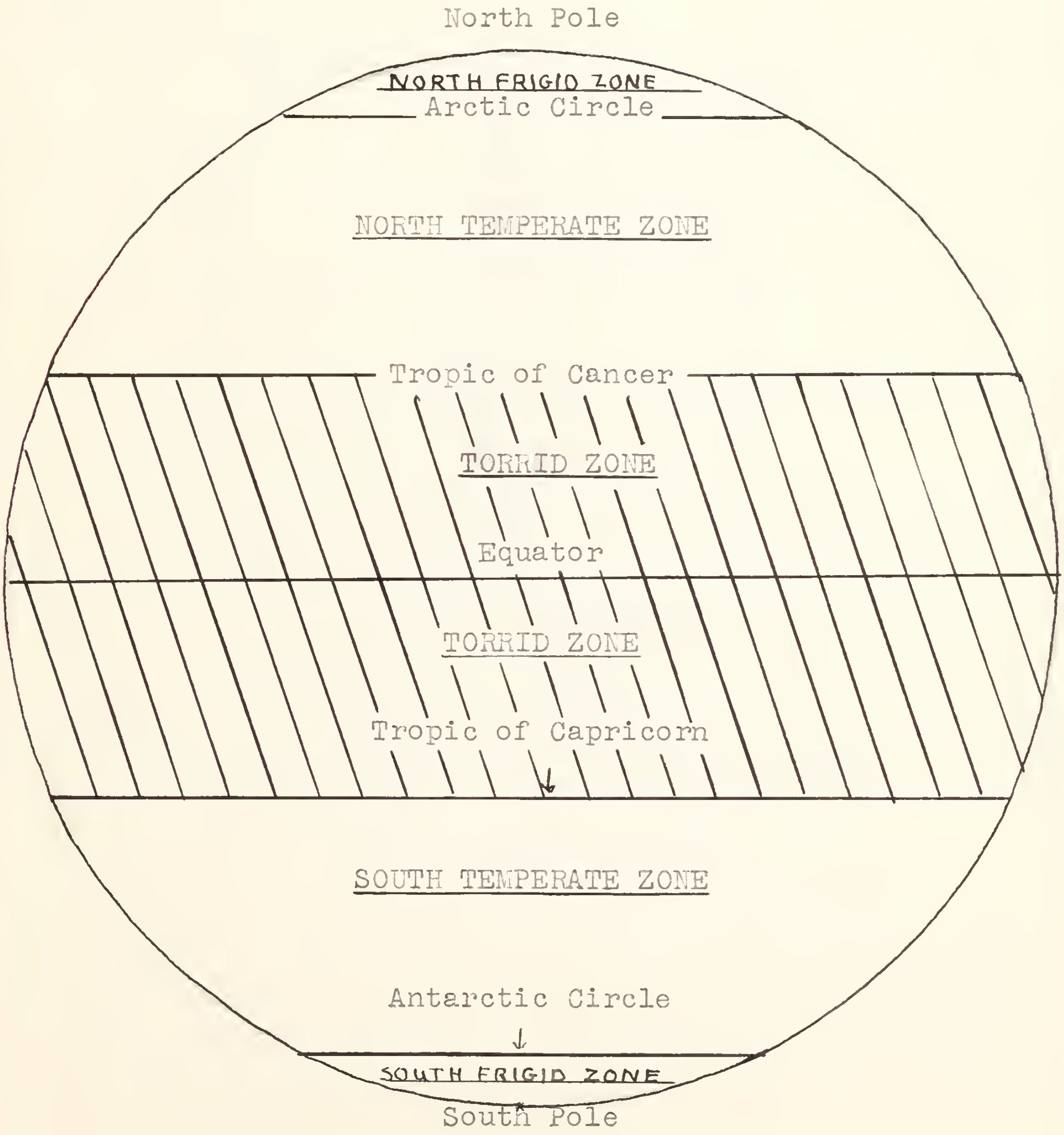
Around the earth at an equal distance from each pole is an imaginary line called the equator. About 23½° north and south of this line is the Torrid Zone where the sun shines vertically on the earth in March and September and almost vertically the rest of the year. This Zone does not have four seasons.

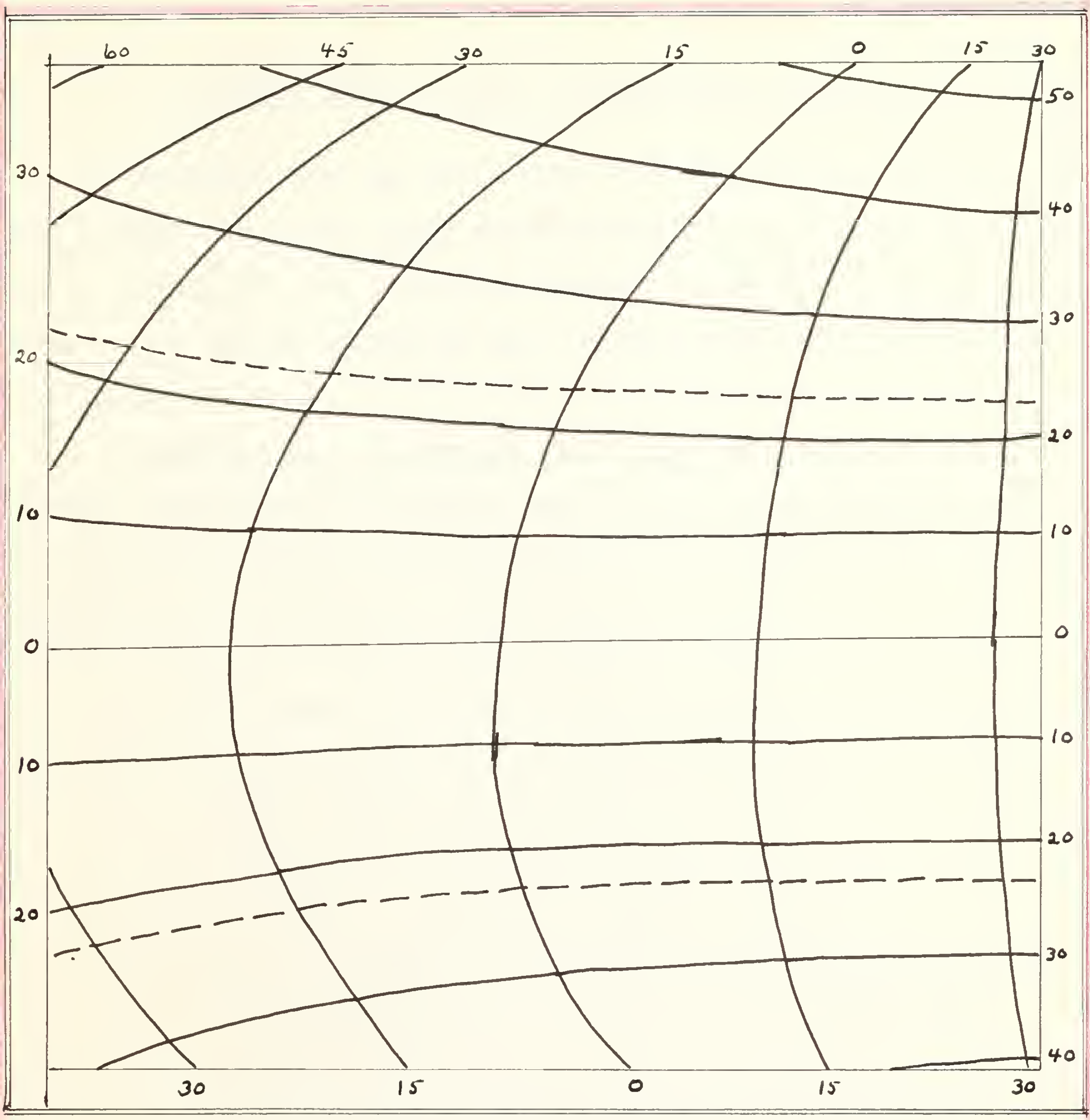
Bordering the Torrid Zone on the north is an imaginary line called on maps the Tropic of Cancer; on the south a line called the Tropic of Capricorn.

The area of the earth extending from about 66½° north latitude to the pole is called the North Frigid Zone. Its southern boundary is the Arctic Circle. The corresponding zone near the South Pole is the South Frigid Zone. Its northern boundary is called the Antarctic Circle.

The sun's rays are very slanting at these points and on one day of the year do not shine at all because of the inclination of the earth's axis. As one goes farther north or south in the Frigid Zones the length of time that the sun does not shine al all becomes longer. So too in the summer the length of time when the sun shines for twenty-four hours a day becomes longer.

The areas between the Torrid and Frigid Zones are called the North and South Temperate Zones. These zones have four seasons; spring, summer, fall, and winter. Summers are warm and winters are cold but these zones do not have the extremes of temperature that the others have.

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33. Map Lines - Zones - Directions - Review

Remember that up means away from the center of the earth not toward the north. Down means toward the center of the earth.

North is that direction nearest the north pole. It is not the top of the world or up. In fact the earth has no top or bottom.

Remember that longitude lines always point north and south. Therefore in finding north on the map follow the longitude lines. So too, latitude lines point east and west. Follow these lines on the map to find east and west.

Put your answers to the following, on the map on page 104.

1. Locate the following directions on the map. Place the letters in the margin.

   North West South East

2. Place a large T on the map to show the Torrid Zone.
3. Place a large N. T. to show the North Temperate Zone.
4. Place a large S. T. to show the South Temperate Zone.
5. Write the word Equator where it belongs.
6. Write the words Tropic of Cancer where they belong.
7. Write the words Tropic of Capricorn where they belong.
8. Place a letter M on a Longitude Line.

9. Place a letter P on a Latitude line.

. . . .

34. Locating Latitude and Longitude

Use the map on page 104 for the following:

1. Put the letter H at this spot:

   15° West Longitude, 30° North Latitude

2. Put the letter J at this spot:

   30° W. Long., 40° N. Lat.

3. Put the letter K at this spot:

   30° E. Long., 20° S. Lat.

4. Put the letter L at this spot:

   10° W. Long., 35° N. Lat.

5. Place the letter S at this spot:

   5° W. Long., 22° S. Lat.

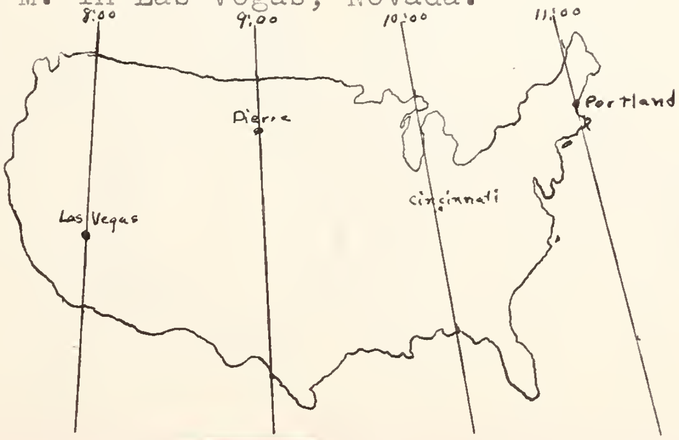
35. Time

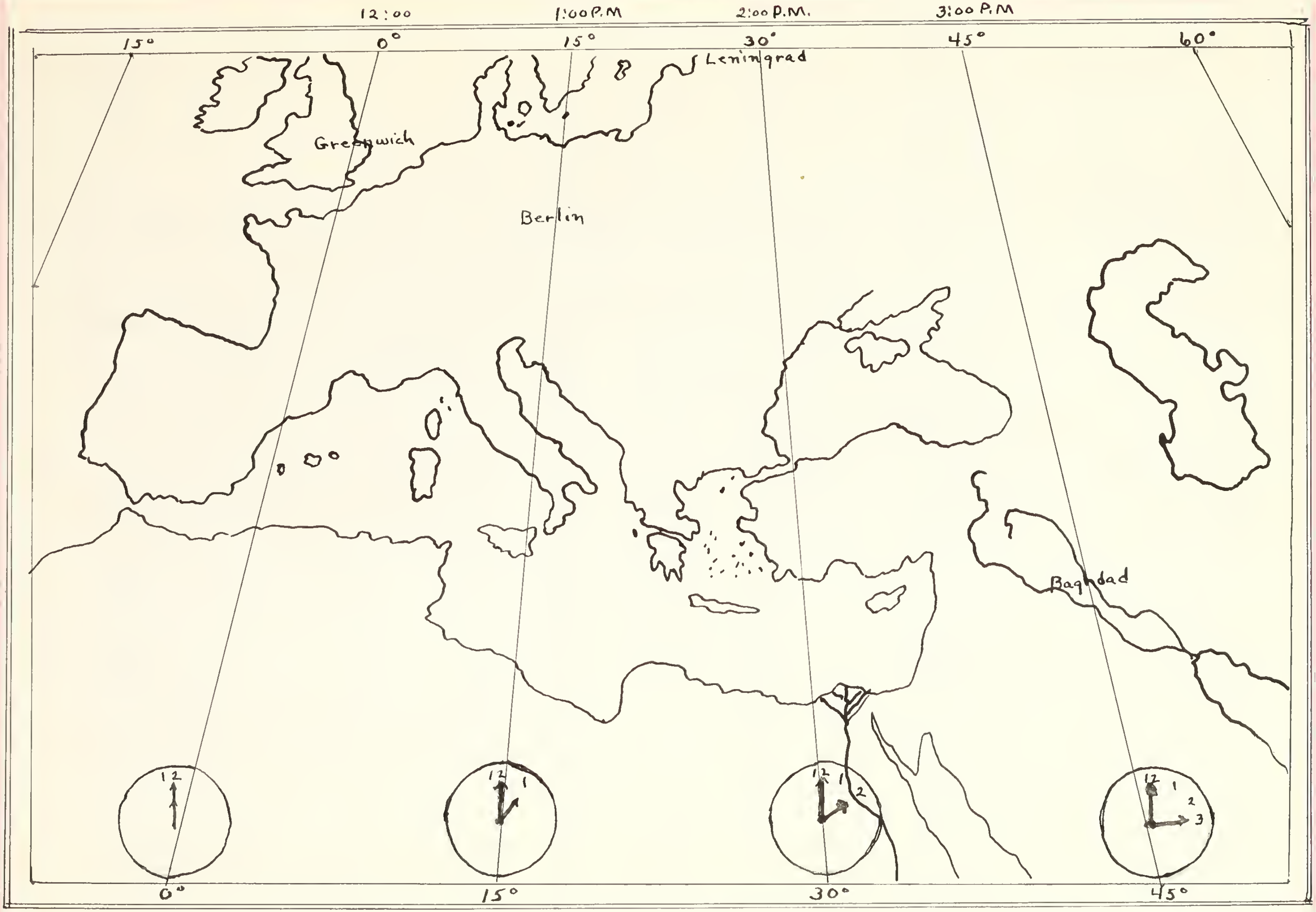
The sun's rays are unchangeable. The Earth's rotation on its axis causes different surfaces to be facing the sun at different times. This causes day and night. It takes one hour for the earth to turn enough for the vertical rays of the sun to sweep over 15° of longitude.

Time on the earth is determined by the sun when it is noon at the Greenwich Meridian, ar at 0° Longitude. It is noon whenever the direct rays of the sun hit any given spot on any meridian.

The earth is divided into time zones, there being a difference of one hour in time at every 15°. The earth turns from west to east, making a complete turn every twenty-four hours. Therefore when it is noon at 0° it is 11 A. M. at 15° W. Long.; 10 o'clock A. M. at 30° W. Long.; 9 A. M. at 45° W. Long., etc.

Example: When it is 11 A. M. in Portland, Maine it is about 10 A. M. in Cincinnati, Ohio, 9 A. M. in Pierre, South Dakota, and 8 A. M. in Las Vegas, Nevada.




12:00
1:00 P.M
2:00 P.M.
3:00 P.M
15°
0°
15°
30°
45°
60°
Leningrad
Greenwich
Berlin
Baghdad
0°
15°
30°
45°

Going east of Greenwich, England it is just the other way. If it is 12 o'clock noon at Greenwich, it is about 1 P. M. in Berlin, Germany, 2 P. M. in Leningrad, Russia, and 3 P. M. in Baghdad, Iraq.

. . . .

Study carefully the material which precedes this work sheet before doing the problems below. Use the map on page 110.

1. Place a letter F on the map above the number which shows 30° West Longitude.
2. Place a letter G above the number which shows 10° South Latitude.
3. Place a T anywhere on the line which shows 15° East Longitude.
4. Place a V anywhere on the line which shows 20° North Latitude.
5. Give the longitude and latitude of the following letters shown on the map.

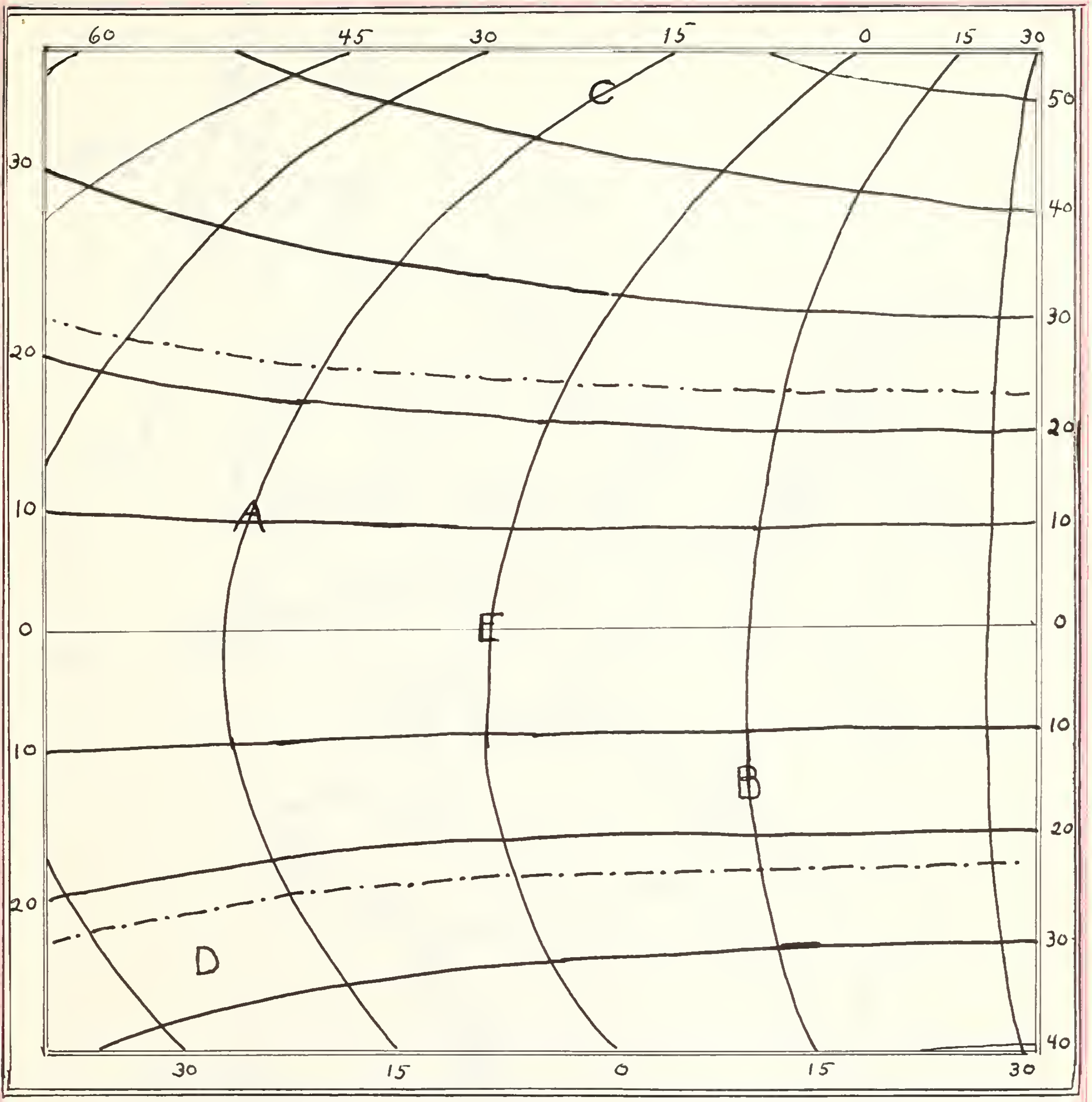
   A. ______________________

   B. ______________________

   C, ______________________

   D, ______________________

   E. ______________________
6. It is 9 P. M. at 0° Long. What time is it at 30° W. Longitude? ______________________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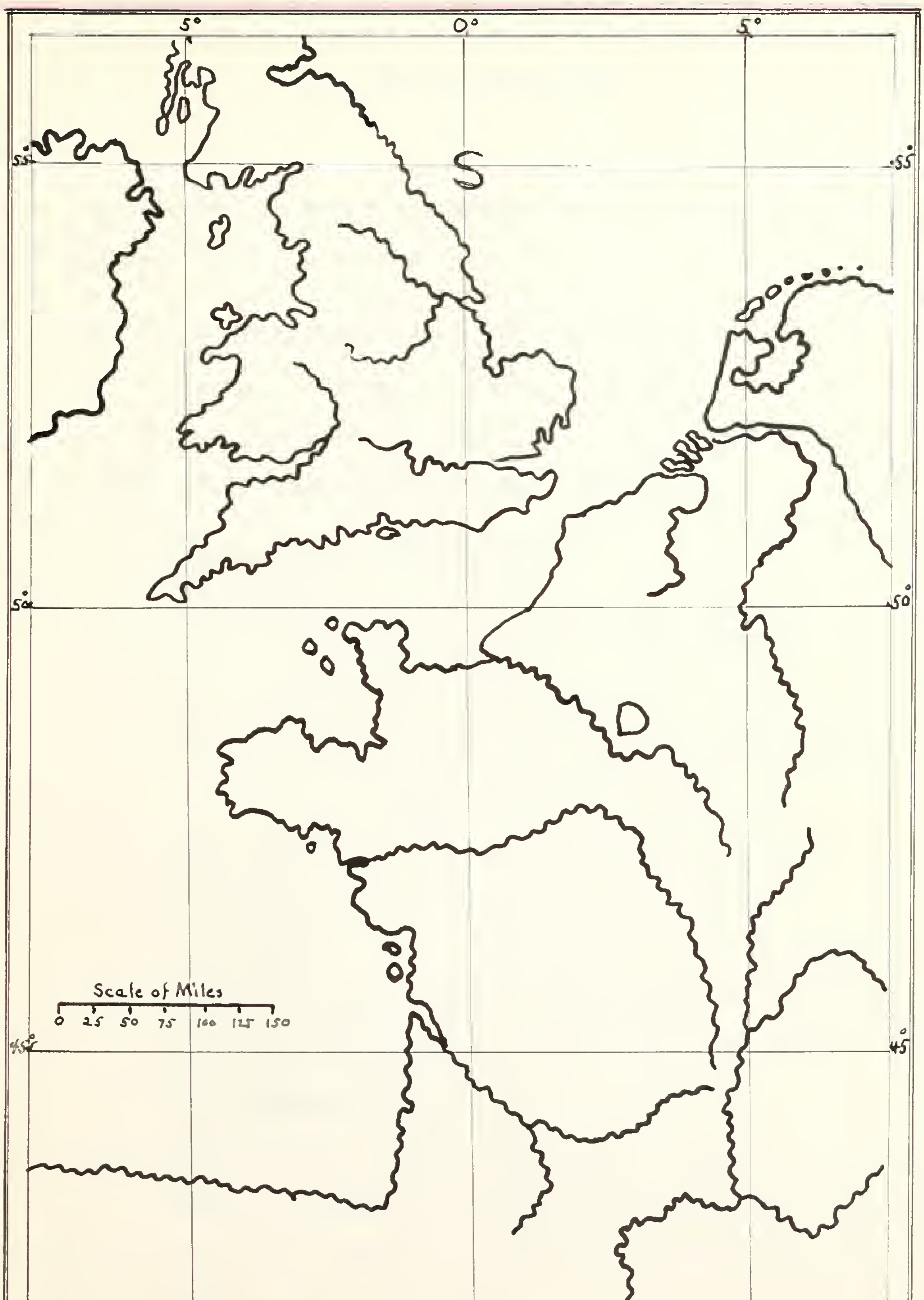

5°
0°
5°
55°
55°
S
50°
50°
D
Scale of Miles
0 25 50 75 100 125 150
45°
45°
5°
0°
5°

36. Review Exercises

A

On the map of Western Europe and England on page 111 work out the following exercises.

1. On the margin of your map mark these directions:

   North East West South

2. Place the letters S. E. in the southeast corner.
3. In what general direction does the river at D flow? __________. Write the answer to the east of the D on the map.
4. Place an S at 5° E. Long., 55° North Lat.
5. Place a circle at 6° W. Long., 50° N. Lat.
6. Write on the map beside the letter S its position according to longitude and latitude.
7. Using the scale of miles, draw lines on the margin of your map to show the following:

   25 miles 100 miles 300 miles

8. Using the scale of miles tell how far it is across the sea from England to the continent of Europe at the nearest point.
9. Place a Z on the map where you think the coast line would be very good for the location of a commercial sea port. Place an R where you think the coast line would not be good.

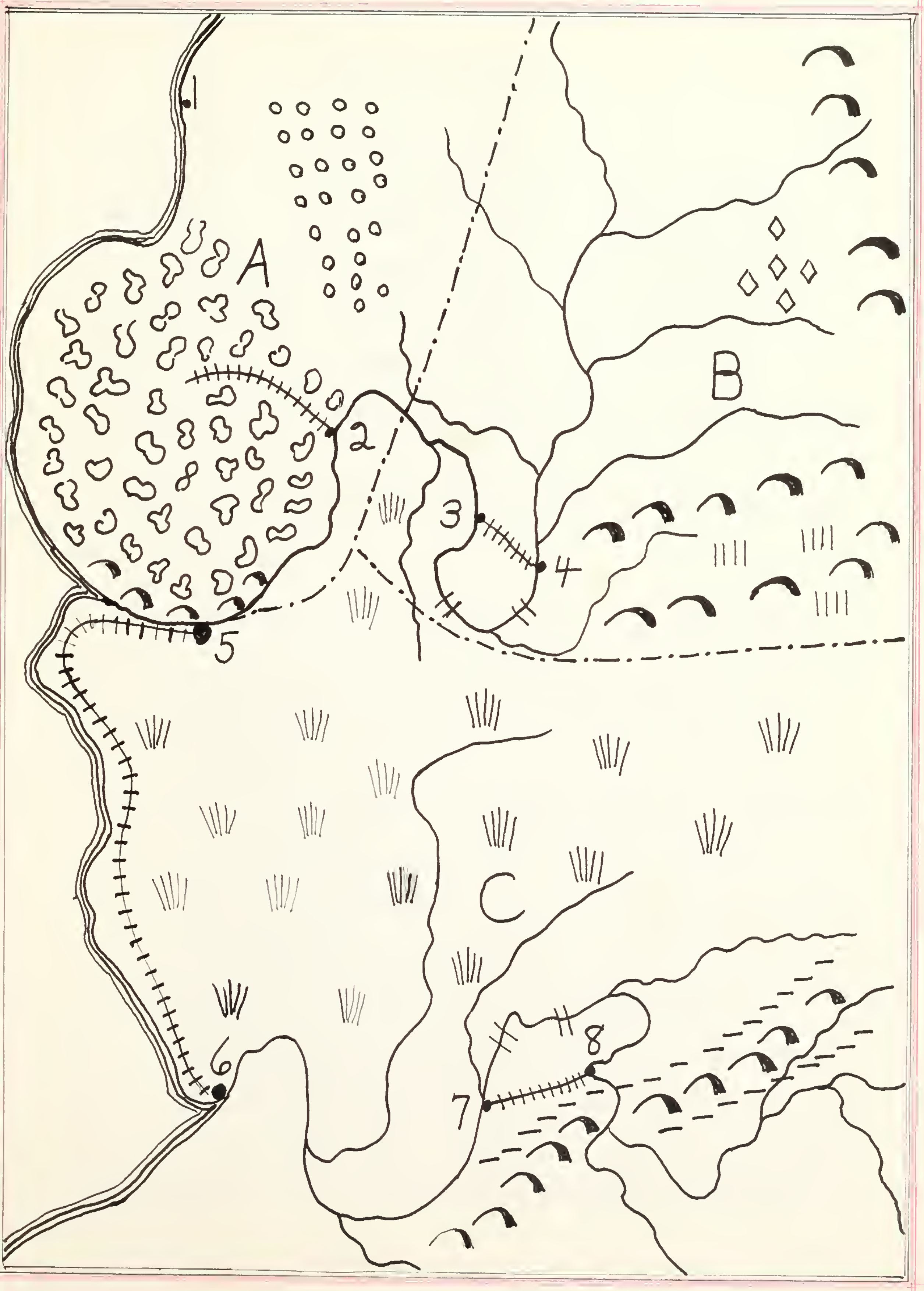
Review Exercises

B

Use a map of Western Europe in your social studies textbook to help you in doing the following map work.

Do the work on your map on page 111.

1. Place a B where a bay may be found.
2. Place a P where a peninsula may be found.
3. Place a T where a river tributary may be found.
4. On the map locate two cities. Name them.
5. On the map locate two rivers. Name them.
6. On the map locate an ocean. Name it.
7. On the map locate two seas. Name them.
8. On the map locate a channel. Name it.
9. On the map locate an island. Name it.
10. On the map locate a cape. Name it.


1
A
B
2
3
4
5
6
C
7
8

Review Exercises

C

Map Legend for map of imaginary land, page 114.

●	Cities	─┼┼┼─	Railroads	⌒ ⌒	Mountains
•	Villages	～	Rivers	☁ ☁	Forests
≋	Seacoast	─//─	Rapids	ⅼⅼⅼ ⅼⅼⅼ	Jungle
°°°°	Cattle	ǀǀǀǀǀ	Iron	⁼⁻	Tin
─·─·─	State Boundaries	♦ ♦ ♦	Gems (precious stones)		

. . . .

Answer the following questions after a careful study of the map on page 114.

1. What state has lumbering and cattle raising? ________
2. What state is noted for mining only? ________________
3. In what state are mining and rubber plantations found? ____
4. What state is likely to have a very hot climate in one part and a cold climate in another? ___________
5. Name a large seaport. ________________________________
   a large river port. ________________________________
6. Name a river port which ships out lumber. ___________
   two river ports which deal with gems and iron. _____
   two river ports which deal with tin. ______________
7. Name a rubber port. __________________________________
8. What state may be partly a grassland plateau? _______

9. Why does the railroad from 5 to 6 go along the coast rather than the shortest way between the two cities? ______________________________

____

____

10. Why are cattle not shipped to the port of 1?

____

____

11. In what general direction does the river entering the sea at 5 flow? ________________, entering the sea at 6? ______________________

12. In what direction on the map is 1? ____________

6? _______________, 5? _________________

13. What are the small rivers flowing into the large rivers called? ______________________

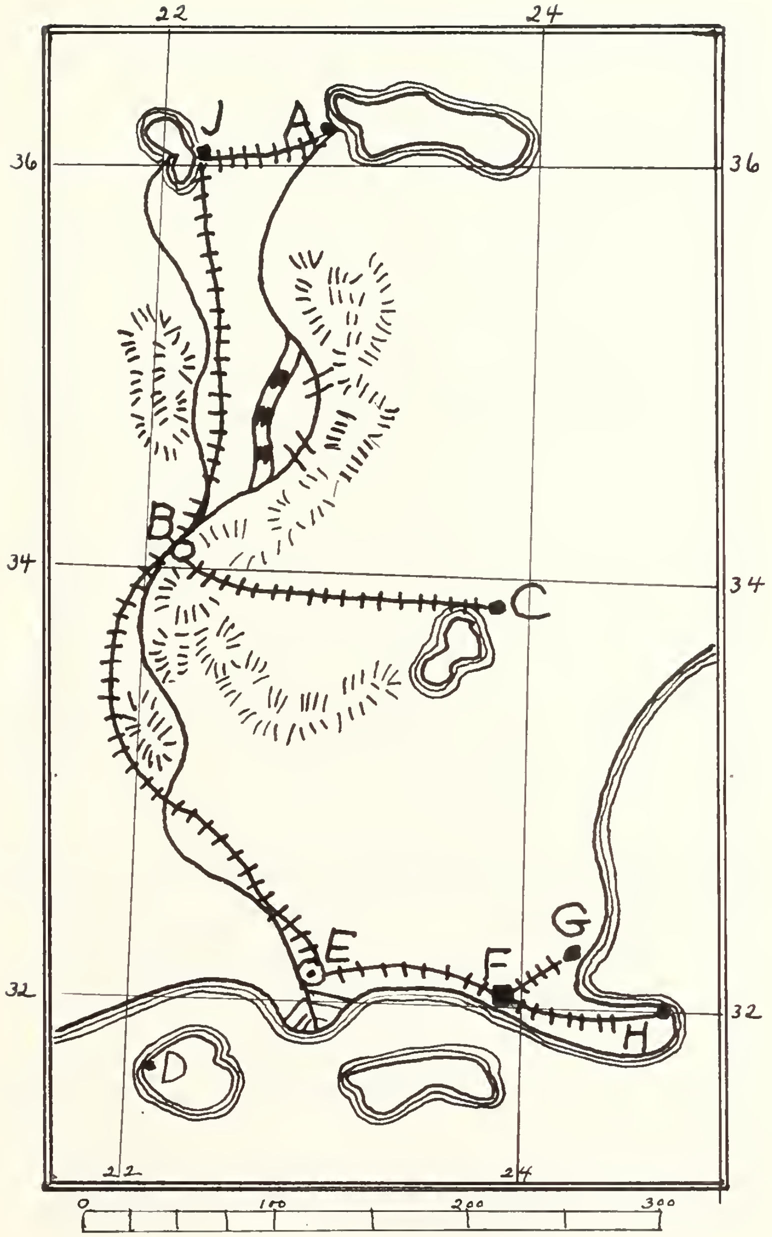
14. Would a boat going from 3 to 2 be going upstream or downstream? ______________________

15. Why were railroads built between 3 and 4? ________

____

Between 7 and 8? ________________________

____



Scale of Miles

Cities

⊙	Over 500,000 people	+++++++++++	Railroads
○	100,000 - 500,000	ʼʼʼ ʼʼʼ ʼʼʼ	Mountains
■	25,000 - 100,000	▬ ▬ ▭	Canals
•	Less than 25,000	—+—+—	Falls

Review Exercises

D

Check the right answer. Use the map on page 117.

1. In going upstream from E which city is reached first?

   J C B A

2. What city has a good ocean harbor?

   D F E G

3. What city is on an island?

   D H C A

4. What city is on a delta?

   J E B F

5. What is most nearly the air distance from J to C?

   100 miles 225 miles

   275 miles 150 miles

6. What is the longitude of B?

   36° W 22° E

   24° S 32° E

7. What city is located on a sound?

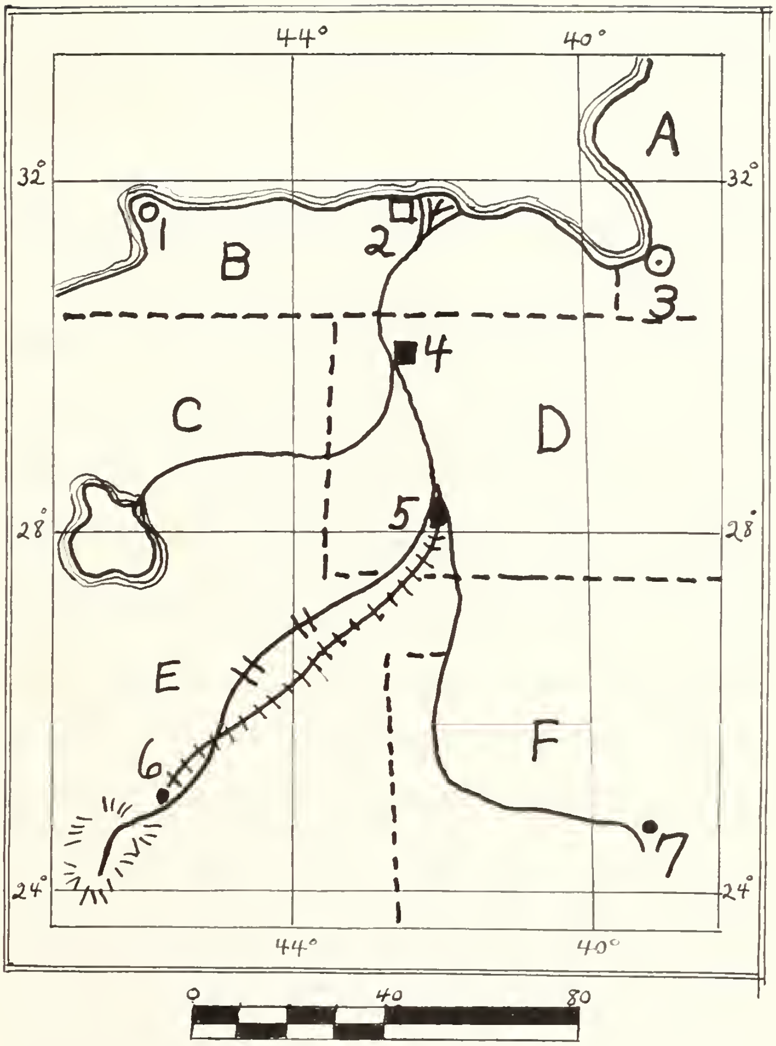
   D G C F

8. Why was the canal built northeast of B?
   - a. To shorten the river
   - b. To supply water power for factories in B
   - c. To allow boats to pass around the falls in the river
   - d. To help in controlling floods

9. Which is nearest the population of F?

30,000	6,500
165,000	200,000

10. Why did the railroad from B to E go in a long indirect line?
    - a. Because it would go by more farmland
    - b. Because it could give passengers a better view of the river
    - c. Because the mountain range had no valleys through which it could pass easily
    - d. Because it would give more work to railroad builders



Scale of Miles

	Cities		
□	Over 500,000	A-B-C-D-E-F	States
■	100,000 - 500,000	- - - - - - - -	State Boundaries
⊙	50,000 - 100,000	/// \\\ ///	Mountains
○	25,000 - 50,000	—╫—	Rapids
•	Under 25,000	┼┼┼┼┼┼┼┼	Railroads

Review Exercises

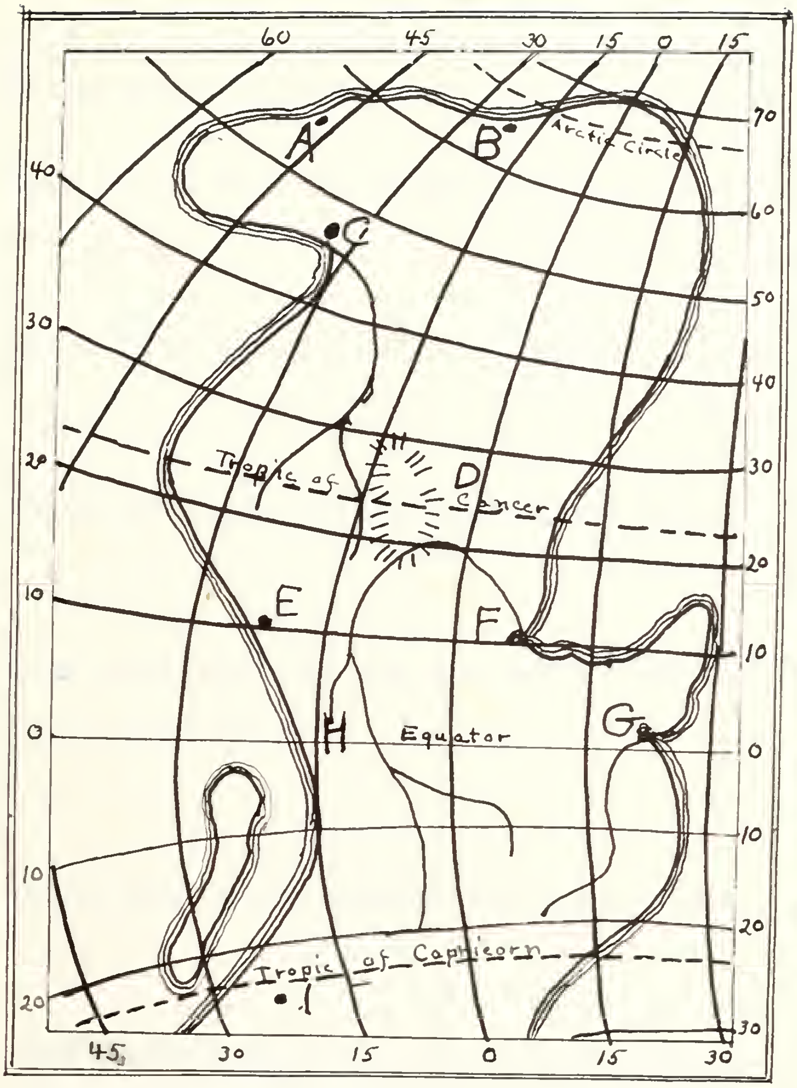
E

Use the map on Page 120 to help you in answering the following questions.

1. What is the population of the city located on a peninsula? ______________________________
2. What is the northern boundary of B? ____________
3. In what direction is 3 from 7? ________________
4. What is the air line distance from 1 to 6? ______
5. What two cities are nearest each other? _________
6. In going downstream from 5 what city would be seen first? ______________________________
7. What is the latitude and longitude of 5? ________
8. Why was the railroad built between 6 and 5 when both are located on a river? ____________________

   ____
9. Which city is located on a delta, 2 or 5? _______
10. Which city has a higher elevation, 1 or 6? ______
11. What is the population of the city located on a bay?

    ____
12. What states have a river boundary line?
13. Is 4 upstream or downstream from 2? ____________
14. Which is farther south, 1 or 3? _______________
15. In what states is found a large lake, the source of a river tributary? ______________________



● Cities

Rivers

Mountains

Review Exercises

F

Check the right answer. Use the map on page 122.

1. When it is 3 P. M. at E what time is it at F?

   5 P. M.   1 P. M.

2. Which city would have the longest night in December?

   A   B

3. Which of these cities is in East Longitude?

   D   F

4. Over what city is the sun most directly overhead all year round?

   D   G.

5. Which city might export the most corn?

   B   C

6. When would the people in B have their coldest weather?

   January   June

7. What direction is B from E?

   northeast   north

8. Which city has the cooler nights all year round?

   H   G

9. Which city receives less rainfall in a year?

E D

10. What city is more apt to export wild animal fur?

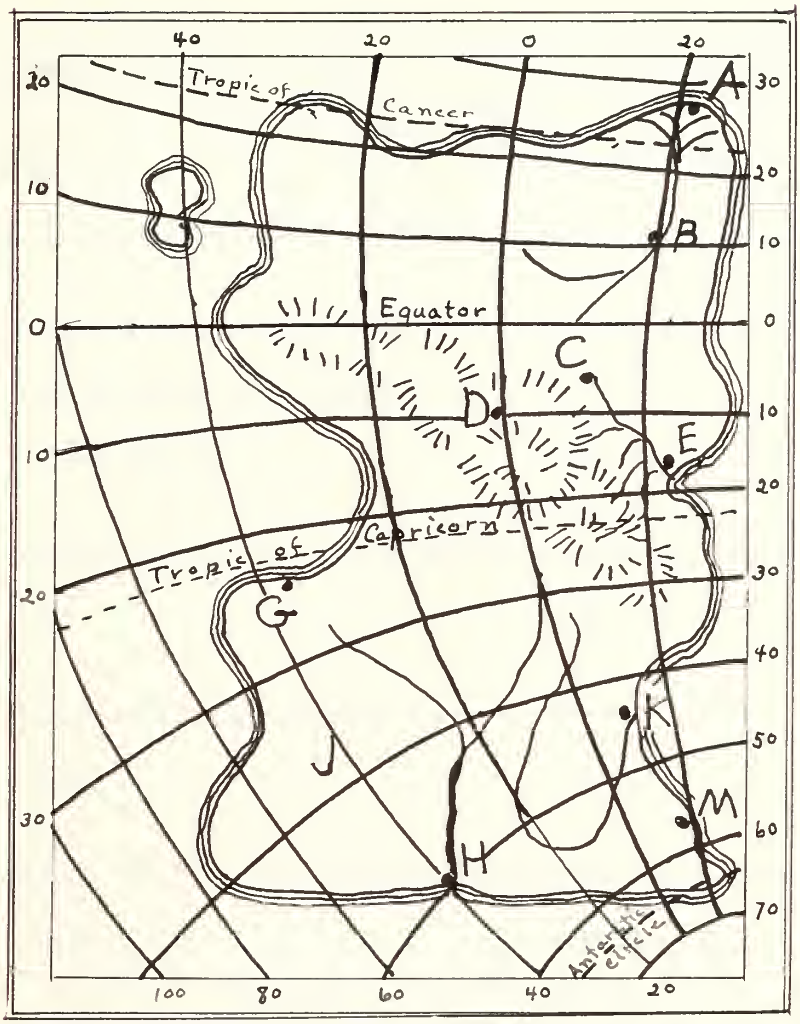
F A

11. Which city has longer days in the year?

B G

12. Which city is due south of B?

D I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20
30
40
50
60
70
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic circle
A
B
C
D
E
G
H
J
K
M
100
80
60
40
20

Review Exercises

G

Check the correct answer. Use the map on page 125.

1. How does the sunrise at M compare with that at H?

   3 hours earlier at M 1 hour earlier at M

2. Compare the number of hours of daylight in a year at M with the number at C.

   More at C Just the same

3. According to latitude which place is farthese south?

   H M

4. Which best describes the climate at E?

   Hot Mild

5. Which of the two cities are near each other?

   D and C C and E

6. Which of these cities would have the coolest temperature?

   D C

7. Which place is nearly straight north from H?

   G D

8. Which city would vary least in temperature during a year?

   C L

9. Which city would receive less rainfall in a year?

L
C

10. How does the elevation of A compare with D?

A is lower
D is lower

37. The Air Age

The Air Age

A view of the globe with the North Pole in the center shows how the great circle routes shorten the distance between two points. This is very important in the days of air travel. It is hard to understand when looking at the usual flat map.

We must keep in mind at all times that the earth is a globe and that flat maps cannot accurately picture the earth's surface.

Practice on a real globe the problems below. It will help you to understand the routes which you are to mark on the North Pole centered map. Use your textbook to help in locating cities.

A map maker in doing this problem would make his lines slightly curved unless they went right through the North Pole. You cannot make them absolutely accurate as the map maker would, but you can draw straight lines from city to city.

Write on the map on page 128.

1. Locate the following places on the map.
    - New York
    - San Francisco
    - Buenos Aires
    - Capetown
    - Honolulu
    - Calcutta
    - Sydney
    - Tokyo
    - London
    - Cairo

2. Draw lines to show the air route around the world which would include these cities.

   New York - San Francisco - Honolulu - Tokyo
   Calcutta - Cairo - London - New York

3. Draw a line to show an air route from New York to Buenos Aires.
4. Draw a line to show an air route from Honolulu to Sydney.
5. Draw a line to show an air route from Capetown to London.
6. Draw a dotted line to show the shortest route from New York to Tokyo.

CHAPTER V

Summary

SUMMARY

> "The major objective of any social study or geography program is the development of understandings. A program designed to develop ability to use the tools necessary for gathering the facts needed in developing and applying understandings should introduce tools and provide practice for their mastery at the time when the tool is needed."[1]

The attainment of this mastery of map reading tools as a result of careful application of the material in the workbook is the hope of the writer.

Thralls summarizes the abilities, habits, and understandings which should be developed as follows:

> "(1) The ability to translate a map into landscape imagery.
>
> (2) An understanding of the distinctive types of information that can be expressed on maps.
>
> (3) The ability to read such types of information from maps and to raise questions concerning the facts shown.
>
> (4) The ability to translate into map language, information expressed in statistics and reading material or secured from field studies, and
>
> (5) The habit of consulting maps."[2]

As each child becomes "map conscious" his interest and curiosity will increase until this new found tool will occupy its rightful place in his intellectual development.

---

[1] Manual for Interpretation of Iowa Every-Pupil Tests of Basic Skills, Form M., Houghton Mifflin Co., (1941), p. 46.

[2] Zoe E. Thralls, "The Theme of Modern Geography," Reprint from The Journal of the National Education Association.

This series of map exercises has been designed for pupil-teacher participation. If problems are discussed and solved together there will be less danger of wrong conclusions and the habit of reasoning questions out to a logical conclusion will be developed in the child.

An attempt has been made to vary the types of exercises so that familarity with several methods of attacking a problem will be attained. In some cases work is done on the map itself. There are completion sentences, multiple choice items, true and false items, matching items, checking, measuring, essay type questions, location questions, and review exercises which summarize all previous instruction.

Fictitious areas have been used generally so that the idea which children might acquire, that of certain facts being associated with one particular area and not of others of similar type, is not inculcated. They must understand that geographic location and arrangement determine conditions under which people live and not whether the land is Europe or Africa or Australia.

If the children learn that certain conditions of geography will logically produce certain conclusions they will be able to adapt their understandings to any locality as the need arises. As Dr. W. Linwood Chase says

> "Skill in locating information desired on a map is not enough--the information must have meaning. . . . Exercises in map study make little contribution to the building of meanings in the pupil unless they bear some

relation to a real problem."[1]

---

[1] W. Linwood Chase, "Wartime Social Studies in the Elementary Schools," *National Council for the Social Studies,* Curriculum Series, No. 3, Washington, (1943), Pp. 45-6.

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